AMERICAN
Railroad Journal
·ESTABLISHED·1831·

WHOLE NO. 2,550.] NEW YORK, MARCH, 1884. [VOLUME LVII.—NO. 12.

# Railroad Notes.

## FINANCIAL.

THE governing committee of the New York Stock Exchange has voted to list $1,000,000 of additional first mortgage six per cent. gold bonds of the Oregon and California Railroad Company. These bonds are dated June 1, 1881, and mature July 1, 1921, and have been issued at the rate of $20,000 a mile upon the completed mileage of the company's railroad, extending from the sixty-fifth to the one hundred and fifteenth mile post south of Roseburg, Oregon, and comprising a total of 421 miles of completed road. First mortgage bonds of the Louisiana Western Railroad Company to the amount of $2,240,000 have also been placed on the regular list. These are six per cent. coupon bonds, due July 1, 1921. The governing committee have also granted the request of Kuhn, Loeb & Co., that "a further amount of $2,500,000 of the Pennsylvania Company's 4½ per cent. guaranteed first mortgage gold bonds, Nos. 12,501 to 15,000, which have been issued by the Pennsylvania Company, and guaranteed by the Pennsylvania Railroad Company, be placed upon the list of the Stock Exchange, making the total amount $15,000,000."

AT a meeting of the directors of the Ohio and Mississippi Railroad, held at Cincinnati, February 25, there were present Robert Garrett, James Sloan, Jr., W. T. Montague, J. L. Donaldson, C. R. Goodwin, Edward Higgins, Jr., A. B. Crane, W. E. Guy, and Judge A. B. Patterson, from Baltimore; Edward L. Whittaker, St. Louis; J. J. Jackson, Parkersburg; W. T. McClintick, Chillicothe, Ohio; J. M. Douglass, receiver, and W. W. Peabody, general manager. Resolutions were adopted authorizing the executive and finance committees to dispose of the new five per cent. mortgage bonds of the company to the amount necessary to pay all arrears of indebtedness, so as to release the railway and other property from the custody of the courts, and put the company again in control. Strong confidence is expressed by the committee in its ability to place the bonds with very little delay. Provision was made for an early application to the court for a proper order to restore the railway to the company, and for a statement of the receiver's accounts.

THE Lehigh and Wilkesbarre Coal Company, which, since the lease of the Central Railroad of New Jersey has passed under the control of the Philadelphia and Reading Railroad Company, held its annual meeting in Philadelphia, on February 28. The annual report states that the surplus for the year's business was $99,142. The total production of coal from the mines of the company for the year was 2,245,062 tons, and in addition 93,770 tons were purchased. The amount of $275,273 expended on colliery improvements and for other new work has been charged to the expense of business. The mortgage debt was reduced during the year $406,605, exclusive of the $34,015 deposited with the trustees for the redemption of the Lehigh Coal and Navigation Company's bonds of 1894. The election for officers resulted as follows: President, W. H. Tillinghast; directors, H. S. Little, John Keen, George De B. Keim, C. C. Knight, F. A. Comly, and B. Willis.

THE annual report of the Chicago and Alton Railroad Company for the fiscal year ending December 31, 1883, gives the gross earnings at $8,811,000, as against $8,215,000 for the year 1882, of which $2,270,000 came from the passenger traffic and $6,198,000 from freight. The income account was swelled to $10,954,000 by other items of revenue, including the interest on bonds held by the company. The operating expenses were $4,880,000, as against $4,486,000 in 1882, leaving the net earnings $3,931,000. The disbursements, including interest and dividends, and $741,000 expended on equipment account, summed up $9,028,000, leaving a balance on December 31, of $1,927,000. During the year $73,000 of six per cent. sinking fund gold bonds and $8,000 of the Mississippi River Bridge Company were redeemed. The company owns 850 miles of main track, of which 750 are laid with steel. The stock and bonds of the company represent $26,310,000.

THE annual meeting of the Philadelphia and Erie Railroad Company was held in Philadelphia, February 11. The annual report showed operating earnings for the year to be $4,108,843; expenses, $2,620,823, and net earnings, $1,488,020. The extraordinary operating expenses were $10,000, and the actual revenue, which includes $4,892 from rents, $1,482,912. After deducting expenses of organization, interest, and drawback paid to the Allegheny Valley Railroad Company, there was a surplus of $215,336, being a gain, as compared with the previous year, of $117,636. The State tax on loans and bonded indebtedness which was paid in 1882, amounting to $46,835, having been declared illegal by the Supreme Court, has been refunded to the company. An election for managers to serve du-

ring the ensuing year was held, after which William Hasell Wilson was elected president, and Joseph S. Van Zandt, secretary.

THE statement of Receiver Clark, regarding the financial condition of the New York and New England Railroad, shows the gross unfunded debt of the company to be $2,337,600. Against this, the balance sheet contains a statement of accounts in the nature of assets amounting to $1,525,900. From this are deducted the value of supplies and material on hand, estimated amount of worthless accounts, doubtful accounts, and the reduction in value of 920 shares of capital stock from par at fifty to the market price at fifteen, leaving the quick assets of the company at $810,300. Deducting this from the unfunded debt of the company, (including interest accrued December 31,) the remainder is $1,527,300. The auditor's estimate of the fixed charges for 1884 is $1,232,600, which does not include the interest on the floating debt. This (if stated at $1,500,000 and borrowed at six per cent.) will add $90,000 per annum.

THE capital stock of the Pennsylvania Railroad Company has been increased $25,000,000 in the past three years, and so rapidly has it passed into the hands of permanent holders that there is less of the stock in brokers' hands now than there was at that time. The capital stock is over $90,000,000, in nearly 2,000,000 shares. The English are large holders of the stock, and at the time of the last dividend, about $1,000,000 was paid on this account to representatives of English holders. About 20,000 shares have been transferred to English account since the dividend. The largest individual stockholder of the company is a Greek merchant living in London, who holds 15,000 shares. William Thaw, one of the directors of the company, holds 11,000 shares; I. V. Williamson, a director of the Reading, has 8,000 shares, and H. Pratt McKean is credited with holding nearly as much.

RECEIVER WOODWARD'S preliminary report in the case of the Central Trust Company, of New York, against the Texas and St. Louis Railway, states that there are not sufficient funds in his hands to pay the employés of the road and the various amounts due the contractors for supplies, and accordingly asks for an order of court empowering him to issue debentures over and above the $16,000 already ordered to be issued to the amount of $184,000, at a rate of interest not exceeding seven per cent. The court granted the order. The total amount of wages due by the road to employés is $103,997.99. Besides this there is due the general officers and agents of the company, $7,196.94, and attorneys, $3,371.82. There was also due the employés of the road prior to November 1, 1883, $17,801.77, making an aggregate of $134,458.52.

THE gross receipts of the Philadelphia and Reading Railroad Company for January were $2,195,800.59, and expenses, including rentals and interest, $1,346,667.76, leaving a profit for the month of $759,132.83, being a gain as compared with the corresponding month of last year of $83,789.98. The loss of the Coal and Iron Company for the month was $91,666.40. The profit of both companies for the fiscal year to January 31 is $1,446,913.18, being a decrease of $61,729.89. This statement includes the following figures, representing the operations of the Central Railroad of New Jersey and branches for January: Gross receipts, $696,051.38; working expenses, $517,893.65; earnings, $178,157.73; rental, $470,232.66; loss for month, $292,074.93.

ON February 13, the Supreme Court of Pennsylvania reached a final settlement of the appeal of the Pennsylvania Railroad Company from the decision of the Court of Common Pleas, of Allegheny county, affirming the right of the city of Pittsburgh to tax real estate of the company used for the transaction of its business. On January 7, when the Supreme Court opened its sessions in Philadelphia, the decree of the lower court was affirmed, Judges Green and Paxson filing a dissenting opinion. In view of the great amounts of money in back taxes which were involved, a motion for reargument was made. This was refused by the court February 13, and execution proceeded against the property.

THE annual report of the Northern Central Railway Company, submitted at the meeting of the stockholders in Baltimore, February 28, shows that the gross revenue for 1883 was $6,088,130, and the operating expenses $3,831,604, leaving net earnings of $2,256,526, an increase as compared with the previous year of $298,672. After deducting interest, rentals, dividends, etc, the balance carried to the credit of profit and loss at the close of the year was $925,528. The revenue from passenger business for the year showed an increase of $46,601. The operating expenses for the year include $244,948, on account of additional tracks, sidings, and other facilities at Baltimore, Canton, and various points upon the line.

THE net earnings of the Chesapeake and Ohio in January, 1884, were $281,394.96; an increase of $29,425.27 over January, 1883. For the whole year 1883, the earnings were $3,906,791.79, and the expenses $2,553,492.47; for 1882, earnings, $3,334,976.91; expenses, $2,302,448.58, being an increase in net earnings of $320,770.99. The increase in net earnings by the Elizabethtown, Lexington and Big Sandy, during 1883, as compared with 1882, was $65,037,88. For January, 1884, the line earned $45,825.00, a decrease of $2,068.11 from January, 1883.

THE official statement of the business of all lines of the Pennsylvania Railroad Company, east of Pittsburgh and Erie, for January, 1884, as compared with the same month in 1883, shows a decrease in gross earnings of $355,124, a decrease in expenses of $50,202, and a decrease in net earnings of $304,922. All lines west of Pittsburgh and Erie for January, 1884, show a deficiency in meeting the liabilities of $106,556, being a decrease, as compared with the same period of 1883, of $328,366.

THE annual report of the Housatonic Railroad shows receipts amounting to $735,492.54. One hundred and ten miles of the road have been steel-tracked during the past year. The sum of $128,600.75 has been expended in repairs and permanent improvements, and $148,901.51 for taxes. These expenses, together with the rentals of branch roads and interest paid on bonds, leaves the net gain $103,350.30.

DURING January, 1884, the estimated earnings of the Illinois Central were $919,956; actual earnings in January, 1883, $1,101,658.79. Land sales in January, 1884, were 1,543 acres, amounting to $9,969.61; and collections in same period, $9,841.72. A dividend of six per cent. was de-

clared March 1. The annual meeting will be held on the second Wednesday of March, 1884.

THE gross earnings during the past year of the entire system of the Pennsylvania Railroad Company, an aggregate of 2,036 of rail and sixty-six miles of canal, were $51,083,252.19, an increase over the previous year of $2,003,419.51. The aggregate working expenses were $31,747,150.44, and as compared with 1882 show an increase of $1,099,744.99. The clear earnings for the year were $9,552,646.73. Profit and loss account, December 31, 1883, aggregated $13,613,184.03.

THE statement of the Chicago, Burlington and Quincy Railroad Company, soon to be published, will, it is reported on excellent authority, show that the net earnings for the first eleven months in 1883 increased $200,000. The net increase for the year is estimated at $2,750,000, and the total net income will be about fourteen per cent. on the share capital.

THE Buffalo, New York and Philadelphia Railroad Company has given notice to the State Department of Pennsylvania, that it has increased its indebtedness to $1,700,000.

THE Denver and Rio Grande Railway has 1,679 miles in operation, an increase of 364 so far, during the present financial year. At the end of the first week in February its earnings thus far in the financial year were $571,000, an increase of $22,000 over same period last year.

ALL of the $3,000,000 4½ per cent. bonds of the Pennsylvania Railroad Company have been subscribed for. These bonds were offered to subscribers in London, Philadelphia, and New York simultaneously by the houses of J. S. Morgan & Co. and Drexel, Morgan & Co.

THE amount of the proposed issue of bonds by the Oregon Railway and Navigation Company with which to purchase the Columbia and Palouse Railroad was $2,700,000. The issue, as decided by the executive committee, will not be made, owing to legal technicalities.

AT a meeting of the Mexican Central Railroad directors, held in Boston, on February 9, it was announced that $1,076,000 in all had been subscribed in pursuance of the call for $1,000,000. The directors voted to increase the capital stock from $25,000,000 to $26,550,000.

THE financial statement of the Delaware and Hudson Canal Company for 1883, shows: Receipts from coal, $9,827,874.18; receipts from railroads, $7,417,643.16; miscellaneous receipts, $596,982.04; total receipts, $17,842,499.04. The net earnings were $1,995,842.54.

THE governing committee of the New York Stock Exchange has listed $2,500,000 of second mortgage bonds of the Chicago and Atlantic Railway Company, and also the twenty per cent. increase of the capital stock of the Pullman Palace Car Company.

THE financial statement of the Union Pacific Railroad for 1883 shows the gross earnings to have been $29,760,994 and the net earnings $13,090,823. The operating expenses of the road for the year were 56.1 per cent. of the gross earnings.

THE statement of the New Orleans, Mobile and Texas Railroad Company for the six months ended December 31, shows the net earnings to be $255,266. A dividend of one per cent. was declared.

THE earnings of the Florida Transit and Peninsular Railroad during the four weeks ended February 22, were $51,494, being an increase of $8,180 over those of the corresponding period in 1883.

PRESIDENT COLBY, of the Wisconsin Central Railroad, has secured from Boston capitalists $2,500,000 to complete the Central system from its present terminus, at Chippewa Falls, to St. Paul.

THE West Shore directors have agreed upon a plan to issue two classes of new bonds to the aggregate amount of five million dollars.

A SECOND mortgage of $4,000,000, given by the Rochester and Pittsburgh Railroad Company, has been recorded.

## CONSTRUCTION.

PORTIONS of the Beach Creek, Clearfield and Southwestern Railroad, extending into the Clearfield coal regions, have been finished, and material is hauled over them. By the opening of spring the entire line will be in operation, and it will be an important feeder of coal to the Jersey Shore and Pine Creek Railroad, a branch of the Reading. The coal lands along the line of the road are being developed. For the first six weeks of the spring months, 100 cars of coal per day will be shipped over the road.

VICE PRESIDENT REED says there is not the slightest foundation for the intimation that the New York, New Haven and Hartford Railroad Company intended to build the New York, Connecticut and Air Line Railroad as a substitute for its own four-track scheme; and that the New York, New Haven and Hartford Railroad Company has not abandoned the plan for building two additional tracks, but is going right on with the work.

IT is reported that a controlling interest in the Petersburg and Weldon Railroad has passed into the hands of the Wilmington and Weldon Railroad Company, and that the latter road contemplate making City Point, Virginia, a shipping port for its freight. This will necessitate the construction of another branch road to City Point. The Petersburg and Weldon Road is sixty-four miles long, and forms a part of the Atlantic Coast Line.

THOMAS DICKSON, president of the Delaware and Hudson Canal Company, said recently that such improvements had been made in railroad transportation during the past fifteen years that canal transportation was no longer economical. For the purpose of railroad substitution the canal, he said, was worth from $5,000 to $8,000 a mile. The rumor has been revived that the company intends to build a railroad.

A RAILROAD from Hoboken ferry to Jersey City Heights, and thence to the northern part of Hudson county, will be begun as soon as the weather permits. It will cost about three hundred thousand dollars. An elevated railroad running cars by cable traction will be a novelty. The company having the scheme in hand is the North Hudson County Railway Company, of which James H. Bonn is president.

MAJOR ELLISON, of Port Stanley, has completed the new passenger depot for the Canada Southern at Niagara Falls, and will commence the erection of a large platform around the depot. Some idea of the size of the platform

may be had when it is stated that 32,000 feet of lumber and 12,000 feet of oak scantling will be utilized in its construction, and the cost will be in the neighborhood of $2,500.

THE scheme to build the New Orleans, Natchez and Northwestern road, from New Orleans along the west bank of the Mississippi River to the Arkansas State line, has taken a tangible shape. The projectors have secured over 100,000 acres of land. The Natchez, Red River and Texas road will require a new birth before work will be resumed and the road extended toward the Sabine.

THE Shade Gap Railroad Company are about to construct a narrow-gauge line from Rock Hill Furnace, Huntington county, Pennsylvania, to Burnt Cabins, Fulton county, fifteen miles. The new road will be a branch of the South Pennsylvania when completed. The capital is $100,000, with the right to increase it to $300,000. Edward R. Wood, of Philadelphia, is president.

IT is reported that the Northern Pacific Railroad Company will begin shortly the construction of an extension from a point just north of Wallula, on the Columbia River, to Puget Sound. Bids for a portion of the work have already been received. San Francisco will be reached from Tacoma by steamers owned and run by the Northern Pacific Company.

THE Pennsylvania Railroad Company is surveying a branch line from Aberdeen, on the Philadelphia, Wilmington and Baltimore Railroad, through Hartford county and into the canning district near Delta, York county. The Baltimore and Ohio Railroad Company will survey a branch from its Baltimore and Philadelphia line into the same territory.

BURNS & NOAKES have thrown up their contract on the Baltimore and Ohio extension to Philadelphia. This is in consequence of the recent decision in Hartford county, Maryland, in favor of the striking Italians. The decision was that all contractors are responsible for the debts of their sub-contractors. Their contract amounts to $500,000.

IT is estimated that to bridge the Mississippi at New Orleans, where it is 2,400 feet wide, would cost nineteen million dollars; but the matter is under consideration. An engineer proposes seven spans of three hundred feet each, one to be a draw; the piers to be creosoted piles, driven in clusters, and heavily capped and cased with iron.

GROUND was broken in Sheffield, February 4, for a railroad to connect that place with Birmingham. The western extension of the Georgia Pacific, from Columbus, Mississippi, to Birmingham, is to be completed and probably meet the Sheffield road near Jasper, about forty-five miles west of Birmingham.

THE Boston and New York Air Line Railroad Company has purchased the right of way for its line from the Stamford town line west to the Mianus River, and is negotiating for land west of the river to Greenwich.

THE new Schuylkill Valley branch of the Pennsylvania Railroad and the branch from Philadelphia to Chestnut Hill are nearly completed, and within a few weeks will be open for traffic.

THE Louisville, New Orleans and Texas Railroad Company announces that its southern portion from Memphis to New Orleans will be completed and ready for business on May 15.

ARTICLES of incorporation of the Kansas City, Des Moines and Northern Railroad Company have been filed. The object is to build a railroad between the cities named.

A CUT on the new South Pennsylvania Railroad three miles east of the Allegheny Mountain tunnel will be ninety-five feet deep and 2,000 feet in length.

THE whole length of the Jersey Southern Road, from Bay Side north, is being repaired. The lower end of the line will be raised about two feet.

A RAILROAD is to be built from Richmond, Virginia, to Ridgeway, North Carolina, so as to pass through Petersburg.

ALL the bridges along the line of the Baltimore Central Railroad Company are being strengthened.

THE gauge of the Philadelphia and Atlantic City Railroad is being widened.

THE South Pennsylvania Railroad is to be completed by January 1, 1886.

THE track of the Gettysburg and Harrisburg Railroad has been completed.

## LEGAL.

UNDER an act passed by the Legislature of Arkansas in 1872, the Memphis and little Rock Railroad Company was reorganized. It retained the same name and succeeded to the property and franchises of the road, under the foreclosure of a mortgage of the original corporation and a conveyance under the decree of foreclosure. The trustees purchased the road at the foreclosure sale, and the bondholders organized the existing corporation. There was due to the holders of the old mortgage bonds $26,000,000 principal and $1,300,000 of interest. The capital stock of the new company was placed at $1,300,000. New mortgage bonds to the amount of $26,000,000 were issued to the trustees for the holders of the outstanding mortgage bonds, and the capital stock was apportioned pro rata among the holders of the bonds. Early in 1880 the majority of the stock was acquired by Marquand, Gould and Sage in the interest of the St. Louis, Iron Mountain and Southern Railway Company. They brought a suit in the name of the company in the United States Circuit Court against Robert K. Dow and others, trustees and holders of the $26,000,000 of mortgage bonds, to annul the bonds and mortgage on the ground that they were issued by the complainant without corporate power. The primary question in the suit was whether, upon the purchase of property, a corporation could mortgage what it had acquired in order to secure the purchase money. Judge Wallace rendered a decision, February 11, in which he held that the rights of corporations were the same as those of an individual in that respect. A general right to borrow money implied the power to mortgage all corporate property, except franchises, unless prohibited by their charter from doing so. In this case there seemed to be no reason to deny the power when the purchaser of the mortgage included the franchise and the whole property of the corporation. "The present case," he said, "is phenomenal in the audacity of the attempt to induce a court of equity to assist a corporation in repudiating its obligations to its creditors, without offering to return the property it acquired by its unauthorized contract with

them. It is now contended that, if there is any obligation on the part of the corporation to pay for the property it purchased, it is not to pay what it agreed to, but to pay a less consideration, because the property was not worth the price agreed to be paid. The court will not compel the bondholders to enter upon any such inquiry. They were entitled to set their own value on their property." The bill was therefore dismissed, with costs.

THE finding of Referee H. S. Cutting in the matter of the petition of the New York, Lackawanna and Western Railroad for the appointment of commissioners to appraise certain lands of the Union Steamboat Company, Buffalo, goes over the whole ground. The Union Steamboat Company's docks are situated on Central Wharf, and the company does a large transportation business on the lakes. It set up ten objections to the granting of a commission, the chief of which was that the land sought to be taken now serves a public use, and therefore cannot be appropriated under the law of eminent domain. The referee holds, however, that the steamboat company's use of the lands is not, properly speaking, a public use. What constitutes public use he defines as follows: "The use or trust for a public use must attach to and be impressed upon the land itself, so that by the mere voluntary act of the person or corporation exercising the use such use or trust cannot be changed and the land converted to some other use." The referee holds that the steamboat company owes no duty to the public of which it cannot divest itself at any moment.

IN Sulzbach Bros. et al. *vs.* Thomson's administrators et al., recently decided by the United States Circuit Court, Eastern District of Pennsylvania, T. and C. were trustees under a mortgage, their duty being to certify to the performance of certain conditions precedent to the issuing of the bonds of a railroad company secured by said mortgage; said bonds were taken by S. The complainant S. charged the trustees with negligent and faithless performance of duty, attributed loss sustained by them to this cause, and sought reimbursement from the estate of T., who is now deceased. The court being satisfied that a loss did result from the negligence of T., referred the case to a master to ascertain the damages, with instructions, that the proper measure of damages would be the difference in value of the property as actually sold under foreclosure had the trustees performed their full duty. The claim of negligence against C. was not sustained by the court, and the bill as to him was dismissed.

AT Wilkesbarre, Pennsylvania, February 7, the North and West Branch Railroad, a branch of the Pennsylvania Railroad, was charged with a nuisance in obstructing a public road in Conyngham Township. It was alleged by the prosecutor that the company had taken possession of a part of the roadway without providing another roadway. In addition to this it was stated that in the construction of their road they had thrown rocks and other obstructions upon the portion of the road they did not occupy. Ex-Attorney-General Palmer, who appeared for the company, maintained that at the time the alleged nuisance was committed the railroad was not completed, and that a reasonable time should elapse before the company could be obliged to open another road, if they had occupied a portion of any highway. After argument the case was given to the jury, who returned a verdict of guilty.

F. W. CLARK, of Dedham, has filed a bill in equity in the Supreme Court, Boston, against Charles Van Brunt and Albert S. Bigelow, of Boston, trustees, and the New York and New England Railroad Company, in which the complainant asks for an accounting of the bonds issued on January 1, 1854, by the Boston Central Railroad for $1,200,000. Mr. Clark also asks for an annual compensation of $400 since 1862 for services as trustee of said mortgage and money expended. These bonds became due in January, 1874, and the New York and New England Road has succeeded to the liabilities of the Boston Central. The bill asks that an order for the sale of the New York and New England property in Massachusetts shall be given by the court.

THE case of Smith against the New York, Susquehanna and Western Railroad Company was before the Supreme Court, Trenton, New Jersey, on the twenty-first ult., on a rule to show cause. One of the grounds of the defence was that the plaintiff was riding on Sunday on the trains of the defendants. The company claimed that plaintiff was not riding as a matter of charity or necessity, and that consequently plaintiff violated a State law. The court held on this point that as a proviso of the statute permitted one train each way on Sunday, citizens had a right to use the trains so run. The rule was discharged.

THE suit of Page, Newell & Co., of Boston, against John Proctor, of Hamilton, railway contractor, which has been pending for many months in the Court of Common Pleas division of the High Court of Justice, was concluded February 10, at Toronto. The plaintiffs sought to compel the defendant to carry out a contract to purchase $40,000 worth of steel rails. The plaintiffs contend that they were ordered and that they were prepared to deliver them, but the defendant, having failed to secure the contract as he expected, afterward refused to accept delivery. The court decided in favor of the defendant.

ON February 28, at San Francisco, Circuit Judge Sawyer decided the railroad tax cases in favor of the Central, Southern, and Northern Pacific Railroad Companies, except in Monterey, Santa Clara, San Mateo, and Colusa counties. The attorney for the railroads stated that the companies would waive judgment and pay the face of the taxes. This causes a loss to the State of $1,000,000, the difference between the face of the taxes and the amount sued for. The same day Governor Stoneman obtained an injunction restraining Attorney-General Marshall from compromising the railroad tax cases.

IN 1872 a narrow gauge railroad was built between Kansas City and Independence, the county seat, six miles, being aided by a township subscription of $250,000. In 1881 the Missouri Pacific bought the road and tore up the track. The county brought suit to compel its replacement. A case in the Supreme Court has been compromised, the Missouri Pacific agreeing to replace narrow-gauge by a standard gauge, to be completed during the present year; giving the people the benefit of two roads between Kansas City and Independence.

JUDGE BAXTER, in the United States Circuit Court, Cincinnati, February 1, dismissed the rule against a claimant who had brought suit against the receiver of the Toledo, Cincinnati and St. Louis Railroad Company, in

the Mercer Common Pleas Court. He notified the claimant that he and his attorneys would be liable to a charge of contempt if he did not forthwith dismiss the suit in the Common Pleas Court. Judge Baxter said the United States Circuit Courts were the only ones having jurisdiction in suits against receivers of those courts.

JOSEPH DISHLER, a brakeman of the Central Railroad, was in 1871 thrown from a passenger train by the breaking of a brake wheel, sustaining severe injuries, having since been unable to work. He sued the company for damages, and the case has been in litigation for several years, going up to the Court of Appeals on a verdict of $3,000 for plaintiff, but was sent back for retrial. The case was closed in the Supreme Court, Lockport, New York, February 28, by a verdict of $5,500 and costs for the plaintiff.

IN the case of the appeal of the Central Railroad Company of New Jersey from the verdict of $30,000 damages awarded the heirs of Mr. Demorest, of Paterson, who was killed in the Parker's Creek accident in 1882, the Supreme Court of New Jersey has set aside the verdict as being excessive, and ordered a new trial. The verdict of $25,000 damages in the suit of the heirs of Mr. Woodruff against the same railroad company for damages for death caused by the same accident was affirmed by the Court.

THE United States Circuit Court, Philadelphia, has decided that the wages certificates issued by the Philadelphia and Reading Railroad Company are not taxable, and have filed a decree peremptorily enjoining the collection of a claim for a tax on them filled on the part of the Government. The certificates were issued in 1878 and 1879. They were receivable for debts due the corporation and the Philadelphia and Reading Coal and Iron Company.

THE Supreme Court of Arkansas, has decided that by consolidation of the Iron Mountain and Cairo and Fulton Railroad Companies exemption from taxation under the old Cairo and Fulton Railway charter is forfeited, and the company must pay the state and county taxes. The case will be taken to the United States Supreme Court.

CHARLES PALMER, while employed as baggage master on the Pittsburgh, Fort Wayne and Chicago Railroad, received injuries in a collision, crippling him for life. He brought suit in the Common Pleas Court of Mahoning County, Ohio, at Youngstown, for damages. The case was settled by the company paying him $25,500.

THE Supreme Court of Pennsylvania has decided, in Pullman Palace Car Company *vs.* Gardner, that where a passenger on a sleeping car has been robbed, evidence to the effect that another passenger in the same car was also robbed on the same night, is admissible as bearing on the want of proper care on the part of the company.

IN the Superior Court, Boston, February 21, in the case of Willard A. Swan against the Boston and Albany Railroad Company, an action of tort to recover damages for injuries received by being struck by an engine of the defendant corporation at South Framingham, the jury found for the plaintiff in the sum of $6,125.

THE Federal Courts at Nashville have decided that the act of the legislature of Tennessee appointing a railway commission to have supervision of railroads in that State is unconstitutional, and has granted an injunction restraining the commission from interfering with the business of the railroad companies.

IN an action on the case, to recover for an injury caused by the use of defective machinery, there is no error in refusing to allow the party to read to the jury certain extracts from a standard work on mechanics. North Chicago Rolling Mills *vs.* Monka, 107 Illinois.

THE injunctions at Pottsville in the cases of the Reading and Mahanoy and Pottsville Railroad Companies have been postponed until March 14.

## ELECTIONS.

AT the annual meeting of the stockholders of the Lackawanna and Pittsburgh Railroad, held in New York, the following gentlemen were elected directors: Archer N. Martin, George D. Chapman, Frank Jenkins, Clinton R. Weeden, Henry A. V. Post, A. J. Wellman, A. W. Miner, C. E. Kimball, Oliver Watson, J. N. Borland, Jr., Cyrus H. Witherbee, Frank S. Smith, and M. S. Blair. Executive officers were elected as follows: President, A. N. Martin; vice-presidents, F. S. Smith and Frank Jenkins; secretary and treasurer, C. E. Kimball. The Lackawanna and Pittsburgh Railroad has been largely under construction during the past year. There are now seventy-two miles of line owned by the company in operation, and forty additional miles have been completed and will be soon opened for traffic. The Lackawanna and Pittsburgh has trackage agreements with the Buffalo, New York and Philadelphia Railroad and the Delaware, Lackawanna and Western.

AT the third annual meeting of the stockholders of the Boston Stock Car Company, Boston, held February 2, 1884, the following gentlemen were elected officers: Joel M. Holden, president; George D. Burton, secretary and treasurer; Clarence Hale, assistant secretary; Edwin F. Perkins, general manager, and Louis C. Southard, counsel. The following were elected directors: Percival L. Everett, James Sturgis, Joel M. Holden, E. F. Perkins, David H. Goodell, James A. Hathaway and George D. Burton. The secretary's report is a very encouraging document, showing large business done by the company in the past, with the certainty of extraordinary expansion. It seems that cars after the company's patents can be put into service for nearly the same figures as an old style car.

THE adjourned annual meeting of the Vermont and Canada Railroad Company, was held at Bellows Falls February 18. The road having been practically merged into the Consolidated Vermont, it was understood in advance that the old board of directors would retire, hence there was a very large attendance. Six thousand eight hundred and ninety-five shares voted for Charles E. Billings and A. S. Hall, of Boston, 5,605 for Henry D. Hyde, Thomas H. Perkins, and Augustus Russ of Boston, and John L. Mason and Jed P. Clark, of Vermont, and 1,290 for the members of the old board not named above. All but five votes for the new board were cast by the son and attorney of the president of the consolidated company.

THE stockholders of the Providence and Worcester Railroad held their annual meeting at Providence, February 4. The following directors were chosen: George A. Leete, Gideon L. Spencer, Elijah B. Stoddard, Lyman A.

Cook, Estus Lamb, Moses B. I. Goddard, Frederick Grinnell, Joseph E. Davis, Oscar J. Rathbun, David K. Phillips, Josiah Laselle, Jonas G. Clark, Benjamin F. Thurber, Charles E. Whitin, John W. Davidson. Concerning terminal facilities in Providence, the directors were authorized to take all the necessary measures substantially in accord with the plans of the commissioners which were adopted by the city council of Providence and approved January 3, 1884.

THE annual election of the Delaware, Lackawanna and Western Railroad, February 26, resulted as follows: President, Samuel Sloan; secretary, Frederick F. Chambers; treasurer, Frederick H. Gibbens; managers, John I. Blair, George Bliss, Percy R. Pyne, William Walter Phelps, Wilson G. Hunt, Elias S. Higgins, Benjamin G. Clarke, Jay Gould, Sidney Dillon, Russell Sage, Edgar S. Auchincloss, Andrew T. McClintock, Abraham R. Van Nest, and Gardner R. Colby. The two last named gentlemen succeed the late William E. Dodge and E. W. Holbrook. There are 1,670 stockholders in this company, and 320,000 shares were voted, all for the above ticket.

AT the annual meeting of the Boston and Albany Railroad held in Boston, February 13, Jarvis A. Dunham, of Pittsfield, presided. It was voted that the directors be requested to publish in the next annual report so much of the charter and by-laws and legislative action as shall practically constitute a history of the road. The old board of directors was unanimously reëlected. A motion that the directors be instructed to discontinue the running of gravel trains on Sunday drew out much discussion, but was finally referred to the directors to do with it as they might deem advisable.

AT the annual meeting of the Boston, Barre and Gardner Railroad, held in Boston, February 6, the following directors were elected: Calvin Foster, W. W. Rice, Charles G. Reed, S. Salisbury, Jr., S. R Haywood, A. George Bullock, Henry M. Witter, William H. Morse, and E. W. Vaill, of Worcester; Nelson D. White, of Winchendon, and Franklin Eaton, of Gardner. The directors elected William H. Morse, president, W. E. Starr, clerk and treasurer, and H. H. Marshall, superintendent. Ex-president Witter remains chairman of the executive committee.

THE stockholders of the Cincinnati, New Orleans and Texas Pacific (Cincinnati Southern), at the annual meeting, December 18, elected John Scott, T. T. Gaff, Briggs Swift, Augustus Wessel (vice Edgar M. Johnson), Otto Plock of New York, W. A. Goodman and Alex. McDonald directors. A committee was appointed to examine the management of the road, one of the stockholders declaring there was a sum of $220,000 not accounted for. The annual report shows that no dividend was declared the past year, but there is a surplus of $5,000.

THE annual meeting of the stockholders of the Northern Central Railway Company was held in Baltimore, February 28. The following are the newly-elected directors: George B. Roberts, Wistar Morris, Samuel C. Huey, John P. Green, Edmund Smith, George Small, B. F. Newcomer, S. M. Shoemaker, J. N. Hutchinson, Dell Noblit, Harry Walters, and Henry Gilbert. At a meeting of the directors held subsequently, George D. Roberts was elected president; Frank Thomson, vice-president; Stephen W. White secretary, and John S. Lieb, treasurer.

THE annual meeting of the stockholders of the Burlington, Cedar Rapids and Northern Railroad was held in Chicago, February 26. Four of the five retiring directors were reëlected: the fifth, John I. Blair, was succeeded by R. R. Cable. At a meeting of the directors subsequently held the following officers were elected: President, Judge Tracy; treasurer, H. H. Hollister; assistant treasurer, C. Stickney: secretary, S. S. Dorwart. The control of the road jointly by three interested companies seems to have been determined upon.

AT the annual meeting of the officers of the Western and Atlantic Railroad, the reports showed every department of the road to be in a satisfactory condition. It is now being laid with steel rails the entire length. Last year about thirty miles of steel rails were laid. All the bridges have been repaired. The old officers were all reëlected, with the exception of Colonel E. W. Cole, who tendered his resignation as vice-president. W. C. Morrill was elected to fill the vacancy occasioned by Mr. Cole's resignation.

THE stockholders of the Belvidere, Delaware Railroad Company, and the Flemington Railroad and Transportation Company, both of which are controlled by the Pennsylvania Railroad, held their annual meetings in Camden, February 4, and elected officers. The Belvidere, Delaware Company elected William H. Wilson president, in place of the late Strickland Kneass.

AT a meeting of the directors of the Western and Atlantic Railroad, held at Atlanta, February 7, the old officers were reëlected, except W. C. Morrill, who is elected to the vacancy caused by the resignation of E, W. Cole, one of the directors.

THE directors of the Lehigh Valley Railroad Company held a meeting February 12, at which Elisha P. Wilbur, a nephew of the late Asa Packer, was elected president, to fill the vacancy caused by the death of Harry E. Packer.

AT the annual meeting of the Pittsfield and North Adams Railroad Company, February 13, last year's board of directors was unanimously reëlected.

AT the annual meeting of the stockholders of the Scioto Valley Railway, held at Columbus, Ohio, the old board of directors was reëlected.

## PERSONAL.

THE following are the latest appointments by the Northern Pacific: J. M. Hanaford, general freight agent in charge of main line and branch office at St. Paul; Charles S. Fee, general passenger agent in charge of both passenger and ticket departments of the main line and branch office at St. Paul; H. C. Davis, assistant general passenger agent at St. Paul, and A. D. Charlton, general Western passenger agent, with office at Portland, Oregon. The official designation of A. L. Stoke is now assistant general freight agent, with office at Portland, Oregon. The appointments took effect March 1, 1884.

THE following has been given out for publication: "Upon the appointment of the receiver of the North River Construction Company all the powers of the board of directors and officers passed to the receiver. The company having completed the work for which it was organized, it remains only for it to settle its accounts and

liquidate its indebtedness. The directors are enjoined from exercising the duties usually devolving upon the board. General Winslow thereupon resigned his position, leaving Colonel Walter Katte, vice-president."

THE general manager of the West Lancashire Railway has addressed the following to the British Women's Temperance Association: "I have the pleasure to inform you that this company has no refreshment rooms at any of its stations where intoxicating liquors are sold. It may be also interesting for you to know that the whole of the company's officials are total abstainers, and that no man receives an appointment under the company unless he has been previously an abstainer of some standing."

THE following changes have been made in the organization of the New York, Ontario and Western Railway Company: 1. The offices of superintendent of motive power, traffic manager, chief engineer and engineer of maintenance of way are abolished. 2. J. C. Anderson to be general passenger agent, in place of Henry Monett, resigned. 3. The duties heretofore performed by the chief engineer and traffic manager will be devolved upon the general superintendent under the direction of the general manager.

ELISHA P. WILBUR succeeds Harry E. Packer as president of the Lehigh Valley Railroad Company. Mr. Wilbur is about fifty-one years of age and a nephew of the late Judge Asa Packer. He was for many years the confidential adviser of that gentleman, and has for many years been a director of the Lehigh Valley Railroad Company. After the death of Robert A. Packer, Mr. Wilbur became manager of the Northern lines.

COLONEL A. A. TALMAGE, general transportation manager of the Missouri Pacific Railway system, has been appointed fourth vice-president of that system, with jurisdiction extending over the entire Wabash line. This appointment retires Colonel Andrews from the general superintendency of the Wabash, but he has been appointed consulting engineer of that road.

WHEN F. B. Gowen retired from the presidency of the Philadelphia and Reading Railroad Company he resumed the practice of law. He has taken up all questions of law affecting the Reading system, and in the course of time will extend his legal scrutiny to all branches of railroad in Pennsylvania in which Mr. Vanderbilt is interested.

C. C. MIDWOOD, secretary for general manager Merrill, of the Boston, Hoosac Tunnel and Western road, is arranging a table of railway signals to be laid before the commission which recently decided upon the standard time, with a view to secure a standard code of signals.

VICE-PRESIDENT Charles Hartshorne will serve as president of the Lehigh Valley Railroad until a successor to ex-Judge Packer shall be chosen. The board of directors have power to fill the vacancy until the next annual meeting of the stockholders.

A. S. MANERY, formerly station agent at Ypsilanti for the Michigan Central, has received the appointment of general freight and ticket agent of the Indianapolis and St. Louis Railroad, with headquarters at Anderson, Indiana.

ERWIN I. CASE, of Peoria, was appointed by Judge Treat, of the United States District Court, St. Louis, receiver of the St. Louis, Hannibal and Keokuk Railroad on February 7. He is placed under bond of $100,000.

THE Rutland (Vermont) Railroad Company has sued ex-president John B. Page for $200,000 for moneys claimed to be due the company, which, it is alleged, were had and retained by him during his official connection.

GENERAL SUPERINTENDENT Bowen, of the New York, Lake Erie and Western Railroad, has been promoted to be one of the vice-presidents of the company, to succeed Robert Harris, resigned.

THE directors of the Philadelphia and Long Branch Railroad, at a meeting February 16, elected William Hasell Wilson, president, to fill the vacancy caused by the death of Strickland Kneass.

THOMAS M. GRIFFITHS, civil and mechanical engineer, who built the Minneapolis and Texas suspension bridges, has made his permanent home at Port Richmond, Staten Island.

HENRY VILLARD is president of the Oregon and California Railroad Company, and his resignation as a director of the Northern Pacific Railroad has not been accepted.

F. BROUGHTON, late general manager of the Grand Trunk and Erie road of Canada, has been appointed vice-president and general manager of the Chicago and Alton Railway.

ROBERT W. DOWNING has been elected controller, William Taylor, treasurer, and Charles E. Pugh, general manager of the Camden and Atlantic Railroad Company.

THE treasurer of the Canadian Pacific, W. Sutherland Taylor, was for many years secretary of the Toronto, Grey and Bruce Railway Company.

JOHN MUIR'S connection with the Northern Pacific ceased March 1. He is now general manager of the Oregon Improvement Company.

GENERAL WINSLOW has resigned the presidency of the North River Construction Company.

## MISCELLANEOUS.

THE Board of Railroad Commissioners of Kansas, in a decision rendered January 21, 1884, prescribed a system of reduced local freight rates for the entire Atchison system of railroads in Kansas. The board also proposed a system of reduced special freight rates to and from Missouri River points. The board, in their decision, admit the reasonableness of most of the company's former rates, but claims that the earnings of the company are too high and should be reduced $900,000 per year, and that that sum, by a system of reduced rates, be distributed among the people. The railroad company announced on the nineteenth of February, the day on which the rates prescribed by the commission took effect, that, in deference to the commission established by the people, it would adopt, under protest, the entire system of mileage distance rates ordered by the commissioners. On the same day the special rates, which cover the entire State traffic crossing the State, and going to and from the State to other States, were enjoined in a suit brought by the Eastern stockholders of the road in the Court of the Third Judicial District of Kansas. The injunction restrains the

company from adopting these special rates, and restrains the commissioners from endeavoring to enforce the penalty prescribed for failure to adopt the same.

DURING the fiscal year ending July 31, 1883, contracts for the operation of the cars of the Pullman Car Company were concluded with eight additional railroads, including the Chicago, Milwaukee and St. Paul and the Central and Southern Pacific Railway system, covering over 10,000 miles of road. Renewals were made with four important companies, including the Union Pacific and Louisville and Nashville systems, covering over 7,000 miles of road. The number of new cars completed and put in service during the year was sixty-five, costing $930,315.40. The number since August 1, the beginning of the present fiscal year, is thirty-seven, costing $529,100. The number of cars now being constructed for service under contracts recently made is sixty-nine, the cost of which is put at $1,000,000. Stockholders will have the opportunity until March 15 of subscribing for the new stock at par to an extent not exceeding one-tenth of their holdings of record on March 1. A sufficient amount of the present outstanding stock owned by the company will be canceled to leave the increase only twenty per cent. on the old stock after all the stock is issued under the last two calls.

MR. BRITTON, State railroad engineer of Texas, who is the first incumbent of that position, has made a report which must be lively reading. The Austin *News* says of it, that "it condemns in measured language certain corporations; unqualifiedly recommends others. He criticises the condition of each road in detail. He says that claims against the Gould system of railways are held indefinitely at general offices in St. Louis before being audited, while the law requires said officer to be located in Texas. He suggests that the state engineer be empowered to have any trestle work or bridges removed that he may decide upon to be replaced by permanent structures of stone, iron and steel, and says that with four exceptions all the passenger depots in Texas are inadequate in size and unclean, and those at Sherman, Austin, Houston and Beaumont are a disgrace to the roads and an outrage upon the traveling public. They should be abated as a nuisance by the municipal authorities of those respective cities."

W. T. SYLVESTER, of Jacksonville, Florida; N. R. Gruelle, of Gainesville, Florida; George W. Hoagland and H. Judd, of New York; W. F. Reading, of New Jersey; J. W. Sylvester, of Florida, and Will S. Stephenson, of Illinois, have filed articles of association in the office of the secretary of state, Georgia, under the name of The Macon, St. Johns and Gulf Railway Company, for the purpose of building a broad gauge road from Macon to some point in Florida not yet decided upon. The capital stock of the company is placed at $2,000,000, divided into 20,000 shares of $100 each, of which the incorporators each take 100. The estimated length of the road is 250 miles. The route outlined embraces the same counties through which the Macon and Florida Air Line road is having a line surveyed.

OUR contemporary, the *American Machinist*, reports that the Baldwin Locomotive Works have five compound motors for tramways nearly completed. They are built for the government of South Australia. Another small motor, about eight tons weight, of the ordinary locomotive pattern, is nearly completed for an Australian tramway company. There are several heavy ten-wheel locomotives in the erecting shop for South America. These engines have fire-boxes made of heavy copper sheet. At the sides of the fire-box there are hand holes about 2½ inches in diameter through the outer shell, to be used for washing the crown sheet. The engines have extended smoke-boxes, and are in other respects the standard ten-wheel engine of the makers.

GENERAL HUGH H. BAXTER, who died in New York on February 17, became a railroad contractor soon after attaining his majority. His first contract was the construction of the Rutland and Bennington Railroad, and he next went to Ohio and built the Toledo and Wabash. He came to New York and became a large speculator in Wall street. He was a director of the New York Central when Commodore Vanderbilt acquired control of the road, and was the only one of the directors who was retained under the new management. He succeeded Mr. Keep as president of the New York Central Railroad, and was an intimate friend and confidential adviser of Commodore Vanderbilt until the latter's death.

WILLIAM H. VANDERBILT is reported to be the largest individual shareholder in the Chicago, Rock Island and Pacific Railroad. There are thirteen directors in the Rock Island board. The annual election takes place in June. The successors of four directors are to be elected then and of five a year later. A list of the stockholders is demanded, it is thought, to render it possible to secure proxies for the Vanderbilt party, to be used at the ensuing election. While only four directors can be turned out then, it is supposed that, if Mr. Vanderbilt gets control, enough more will resign to give him a majority in the board.

THE government of New South Wales has invited tenders for the supply of 150,000 tons of steel rails, to be manufactured in that colony. Its commissioner of railways says that there were imported into New South Wales and Victoria within the last ten years, 1,250,000 tons of iron and steel. The government of New South Wales has within a few years constructed over 1,200 miles of railroad, and more than 500 miles are now being constructed, all the materials for which (except the sleepers) have been imported from England.

THE Southern Railway and Steamship Association, Washington, has adjusted the difficulties which threatened to break up the association. It has been resolved that the agreement of October 24, 1883, be continued in force until July 1, 1884, with the understanding that the executive committee will have power on June 1 next to continue it until January 1, 1885, by unanimous agreement; but if unable to agree upon so doing, then a meeting of the association on or before July 1 shall be held.

AT the car works of Harlan & Hollingsworth, Wilmington, Delaware, railway cars are being built for use between Madrid and Barcelona, Spain. Other work in hand is building cars for the Argentine Republic, including several "sleepers," and a car for the use of the president of that country. These orders from South America succeed others, already filled, from three railroads on that continent. The shipbuilding department of the works reports great activity.

A NEW system of handling excess baggage has been

adopted by the Chicago and Northwestern and Milwaukee and St. Paul. It went into effect March 1, and is known as the C. O. D. system. It obviates much of the delay heretofore experienced in checking baggage and making cash collections at starting point, and delay (if any) will be transferred to the point of destination of baggage, where there is more time to collect the excess charges.

AN automatic railway signal has been patented by Mr. Theophilus Arndt, of Florin, Pennsylvania. It provides for placing an extra rail at the side of one of the track rails, the extra rail being slightly higher and with sloping ends; there is an attachment to the locomotive, by which a lever is operated in passing over this extra rail, and thus the whistle is blown during the passage over the sloped rail.

A MEETING of the stockholders of the Conotton Valley Railroad Company was held at Boston, February 21, at which a committee was appointed to act in conjunction with a committee of the bondholders, with authority to take such action as shall best secure to the stockholders equitable and legal rights in any reorganization or sale of the railway or its property, or take any action which shall stay proceedings until their rights shall be recognized.

AN exchange reports that the Schnectady Locomotive Works have recently shipped to the Southern Pacific road three passenger engines, weighing forty-five tons each, having cylinders 18x24 inches and drivers seventy-three inches diameter; and to the Chesapeake, Ohio and Southwestern six ten wheel freight engines, with 18x24 inch cylinders, and four eight-wheel freight engines, with 17x24 inch cylinders.

A UNIFORM schedule of train signals will probably be adopted on all the railroads in the country. At the recent Time Convention held in Chicago, resolutions were adopted recommending another convention for the adoption of uniform train signals. Notices have been sent out to the different railroads asking for the appointment of representatives to this convention, the time for which will be named hereafter.

THE Philadelphia *Record* of February 14, said: "The Pennsylvania Railroad Company has about consummated negotiations with the Lehigh Valley Railroad Company for the lease of the latter line to the former. These negotiations have been pending for nearly a year, but were not sooner completed because of the ill-health of the late President Packer, and the inability to reach satisfactory terms."

THE following are announcements of conventions during the coming spring: March 17—Western Association of General Passenger and Ticket Agents, in Cincinnati. March 18—National Association of General Passenger and Ticket Agents, in Cincinnati. April 9—General Time Convention, at Cincinnati. April 16—Southern Railway Time Convention, in New York City. May 20—Railway Car Accountants' Association, in Richmond, Va.

THE Norfolk (Virginia) and Western Railroad Company is building a large transfer boat to ply between its new wharves in Norfolk, and Cherrystone, where connection will be made with the New York and Philadelphia Railroad. The boat will carry eight loaded passenger or freight cars. A transfer will be made and connection completed in a few months.

A CONTRACT has been made between President Robert Harris, of the Northern Pacific, and president W. B. Washburn, of the Minneapolis, Sault Ste, Marie and Atlantic Railway Company, whereby the latter corporation secures a joint use in perpetuity of the extensive terminal facilities of the Northern Pacific Company in Minneapolis, including the iron bridge across the Mississippi.

A WOMAN has been tending a switch at a railroad junction near Macon, Georgia, since 1862, having succeeded her deceased husband, who was switchman for ten years previous. She is at her post from six in the morning till six in the evening, and during the whole long period of her service has never misplaced a switch. She is sixty-two years old.

THE Illinois Southern and Paducah Railway Company was incorporated February 18, with a capital of $1,000,000, to construct a standard gauge road from Carbondale to Metropolis, Illinois, and thence to Paducah, Kentucky, forming a connecting link in the line of the New Orleans, Jackson and Northern Railroad between St. Louis and New Orleans.

NEWS reaches us that the Hydraulic Cement, manufactured by the Lehigh Valley Cement Company, No. 152 Broadway, New York, has been used very extensively during the past ten years in important railroad work, invariably with effective results. A pamphlet containing record of tests, etc., is sent by the above company, on application.

THE Baltimore and Ohio has leased the right of way over the Cleveland, Akron and Columbus Road from the present western terminus of the Pittsburgh, Cleveland and Toledo, at Akron, to the point where it intersects the Wheeling and Lake Erie, which gives them a short and direct line into Toledo.

THE Illinois Central Railroad has withdrawn its offer of $800,000 for the three blocks of land on the lake front, Chicago, on which it was proposed to erect a union station for itself, the Michigan Central, and the Baltimore and Ohio. The offer still holds good as to the Michigan Central.

A TRAFFIC agreement has been made between the Louisville, New Albany and Chicago Railroad and the Cincinnati, Indianapolis, St. Louis and Chicago Road. The agreement is based on an equal division of the carrying trade between the two large cities on the lines of the two roads.

THE following have been appointed by the mayor of Baltimore, directors on the part of the city iu the Baltimore and Ohio Railroad Company: B. F. Ulman, Edward L. Bartlett, Samuel E. Atkinson, Robert Ober, Michael Coakley and Jacob H. Hook.

AT the half-yearly meeting of the North Metropolitan Tramway companies, London, the chairman said that they were now building their own cars at a cost of £140 per car, compared with £190 previously paid for English, and a great deal more for American cars.

ON the Cumberland Valley Railway, Pennsylvania, there is a car specially fitted with dynamos and stationary steam-motor, lamps, etc., to supply the electric light to any part of the line it may be wanted at in case of a collision, or for night work on the track.

THE corporate existence of the New York and Boston

Inland Railroad Company in Connecticut, has expired by the statutes of the State, the company having failed to expend ten per cent. of its subscribed capital in construction before February 4, as required.

THE Atchison, Topeka and Santa Fé Railroad Company has issued a circular announcing that it will transport through California, freight in connection with the Southern Pacific from Kansas City, Atchison or Denver, without breaking bulk.

A CHARTER has been granted to the Meadville and Lineville Railway, of Crawford County, Pennsylvania, capital $200,000. The line is an old one, twenty-one miles in length, and was recently bought in at sheriff's sale.

THE Pittsburgh, Buffalo and Rochester and Brandy Camp Railroad Companies have consolidated, with a capital stock of $3,000,000. The new road is to be known as the Pittsburg and Buffalo Railroad Company.

THE report published in a morning newspaper that an enlargement of the Grand Central depot was contemplated by the New York Central Railroad Company is denied by President Rutter.

AN exchange reports that Tacoma, Wyoming Territory, rejoices over the fall of Villard. Real estate is going up, and investors are flocking in, now that the western terminus of the Northern Pacific is fixed at that point.

THE Gilbert Car Company, Troy, New York, has now in hand contracts for 300 freight cars to go to Chili, ten passenger cars for Brazil, and several passenger cars for Nicaragua.

THERE is a rumor that the Pennsylvania Railroad, as well as the Grand Trunk, is looking toward the lease of the West Shore Railroad.

EIGHT hundred freight cars for the Union Pacific road are in course of construction at the Peninsular Car Works, Detroit.

THE man who buys the wood burned by the Maine Central Railroad says that in Maine wood is growing faster than it is cut.

BOTH of the mills at Swift's Iron and Steel works, Cincinnati, are being run double time in all departments.

IRON cars for copper mines in Virginia, are being built by the Youngstown Car Manufacturing Company.

WITHIN the next two months the double track of the West Chester Road will be completed to Media.

THE district railway trains between Kensington and Putney (England) are lighted by electricity.

GOVERNOR LOWRY, Mississippi, vetoed the Railroad Commission bill. His veto was sustained.

SINCE March 1 the New England Railroad has declined to carry through freight for the Erie.

ELECTRIC lighting of trains has been introduced on the Vienna and Trieste Railroad.

THE Pittsburgh and Western Railroad has been sold to the Baltimore and Ohio.

IN Australia, the gauge of five feet and three inches has been adopted.

THE Michigan Car Company, Detroit, report great activity.

## MEXICAN NOTES.

*Adapted from the Mexican Financier.*

IT is understood that the time between the city of Mexico and New York or Boston will be six days on the completion of the Mexican Central, while the time to San Francisco will be four days. From Mexico to the boundary at El Paso will be about two days, the distance being 1,224 miles. From El Paso to San Francisco there will be a choice of two routes, the Atchison, Topeka and Santa Fé, up the Rio Grande valley to Albuquerque and thence to California by the Atlantic and Pacific, and from El Paso to New Orleans there will also be a choice of two routes, either by the Texas and Pacific or Southern Pacific. The Texas and Pacific line will also communicate with the East by way of St. Louis. The most intimate connection of the Mexican Central for the East will be by the allied line of the Atchison, Topeka and Santa Fé, through New Mexico and Kansas to the Missouri River at Kansas City, and thence by the "Great Burlington Route," or Hannibal and St. Joseph and Chicago, Burlington and Quincy railroads.

THE people of the State of Michoacan, one of the richest in natural resources in the Republic, will soon have reason to rejoice in the building of the Mexican National Railway in their midst. Adopting the true policy, the company finds it for its own profit to meet the public in a liberal spirit, encouraging trade by adopting low rates of freights and fares, and seizing every opportunity for attracting business and building up industries along its line, instead of squeezing from its traffic the utmost immediate returns possible, and thus repressing every tendency to enterprise and development in the country tributary to it.

THE Mexican Indian laborers have excellent points. They are docile, frugal, industrious, obedient and uncomplaining. The builders of the railways testify to their superiority as workmen. The railways are affording them opportunity for better employment at better wages; and with better wages their wants increase, giving them new value as a consuming as well as a producing class. Ambition is born of opportunity, and instances are multiplying of their rising from the ranks of common laborers to positions of responsibility, from foremen of track-laying gangs upwards.

THE importance laid upon the study of English in this republic is shown by the fact that over 300 students of the University, or National Preparatory School, have inscribed themselves for that course. According to statistics received by the Secretary of Public Instruction, something like 5,000 persons in this country are at present studying English.

IT is proposed to introduce the cable tramway system, so successful in San Francisco and Chicago, upon the street railways of Mexican cities, a company having been organized in San Francisco for the purpose, under the name of the Mexican Cable Tramways Company.

THE Mexican Central Railway Company, has announced by circular that regular trains will be running on its line between the first and fifteenth of April. Driving the last spike was an epoch in Mexican history.

# American Railroad Journal.

PUBLISHED MONTHLY BY THE

PHENIX PUBLISHING CO. OF N. Y.,

At No. 284 PEARL STREET, NEW YORK.

GEO. F. SWAIN, PRESIDENT. L. FAIRBANKS, JR., VICE-PRESIDENT.
CHAS. T. VALENTINE, SEC. AND TREAS.

*Entered at the Post Office at New York City as Second-Class Mail Matter.*

SUBSCRIPTION RATES.

**Subscription, per annum** ..... **$3 00**
**Foreign subscription, per annum [including postage]** ....**3 24**
**Single copies** ..... **25**

All Subscriptions are payable in advance.

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MR. FREDERIC ALGAR, Nos. 11 and 12 Clements Lane, Lombard Street, London, E. C., England, is the authorized European Agent for the JOURNAL.

NEW YORK, MARCH, 1884.


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## TO READERS AND ADVERTISERS.

THERE is no necessity why we should "blow our own horn," because the merits of our publication speak for themselves, and directing the attention of subscribers and advertisers to some features of the present conduct of this magazine, which we regard as important from their standpoint, does not lay us open to the charge of doing this.

Published but once a month, the "layout" of the AMERICAN RAILROAD JOURNAL must necessarily differ from that of periodicals which appear at shorter intervals. The month's news in a condensed form, with articles of due length containing the more prominent record of leading events during the period are, of course, indispensable; but details which appear in daily and weekly papers, and are only of importance when published at their proper time, are wisely made to give place to articles of permanent value. Readers are confidently referred to these columns for proof that this obviously judicious preference is properly recognized by us; and advertisers are respectfully reminded that their interest is well served by the presence in the reading columns of the journal enjoying their patronage, of contributions giving it a value which insures its being placed on file by subscribers. Their announcements are thereby made as permanent as that of the contents of the magazine in which they appear, an advantage upon the value of which we need not insist.

In the department of "Communications," moreover, the same attribute of special value is to be remarked. Representing many pens and various interests, this department is of considerable and growing importance; and its widely representative character, comprehending the charm of differing style and ideas, is pleasing as well as instructive to the reader, and assures, besides, that quality of widespread and long-lived interest which is most advantageous to advertisers.

All that we have said is, moreover, true of that part of the JOURNAL in which new railroad inventions are described and illustrated. This, we venture to state in addition, is invaluable to the practical railroad man, whatever may be his department of activity. The record of mechanical improvement is fertile in suggestion, the use of which infringes no patent and conduces to the general good. That every issue of this periodical gives the latest results of mechanical ingenuity as applied to railroads, the product of thoughtful minds and skillful hands in this and other countries, is an element of its strength and usefulness, which we regard with the satisfaction shared by readers universally.

From its commencement, the department "Tramway" has been read eagerly, and the experiment of its institution approved, as a unique and valuable feature of this publication. All the important news and articles of per-

manent interest appear in every issue under the head quoted, one which, by the way, is employed as the proper expression, in all English-speaking countries; and, seeing that the JOURNAL has many readers in Great Britain, the English colonies, and many other foreign lands, is preferred to the name more generally used in this country alone.

A word to manufacturers desirous of finding the best means of making their announcements known to railroad and tramway companies, will fitly end these modest words about ourselves. The staunch persistency with which many of these patronize the JOURNAL, in some cases throughout many years, is the best evidence that they appreciate its value as an advertising medium. They always find their announcements in good company, handsomely printed in a paper every page of which is artistic in appearance; they know that they are fairly dealt with, uniform rates being charged; that they are not in the company of "deadheads" printed to make a great show of business, and that what they have to say is part and parcel of the valuable railroad and tramway information periodically given to all the leading companies and manufacturers, and to a large constituency of wide-awake readers outside of these but attached to kindred industries, in every civilized country, by "the oldest railroad paper in the world."

## BUSINESS MEN AND POLITICS.

THE very spirited letter which "Pontifex" contributes to our columns is virtually an accusation. Its main incident is an instance of corruption, showing how popular rights, in the matter cited, were not only at the mercy of petty local politicians, but abused by these pestilential parasites. We cannot but feel convinced that the facts recorded are examples of what is general in this country, and share the shame which all true patriots and all just men must feel in reading such a recital.

Every good citizen is, as a matter of course, interested in and anxious for good government, wisely and purely administered, in the municipality, the State, and the Union. The body politic should be like a vigorous tree, nourished with healthy sap circulating in its every part, from giant stem to the tiniest twig and leaf, giving combined symmetry and strength, beauty and majesty.

In various ways, by speech, newspaper article, and the more ambitious agency of magazine literature, the doctrine is being iterated and reiterated, that the cure for evils corrupting and deforming our political structure, is in the hands of the people, whose industry and virtue save the Union from political decay, notwithstanding the influences which disgrace it and retard its development. Happily there are present indications that the lesson falls upon ears willing to learn and act upon it. The beginning of this year of political contest is characterized by movements giving the promise that enlightened and virtuous citizens are awake to the duty of themselves deciding who shall administer for them, and on what principles administration shall be effected.

No class of men is more interested in good government than business people. Abuses wrought by corruption, stupidity, narrow-minded and partial legislation prejudice their welfare vitally, whether by direct or indirect means. The steady development of industrial progress is the best evidence of a nation's possession of the strength and graces which ennoble it; and the possession of these finds its proper expression in the material progress possible only to a virtuous and manly people. Surely, therefore, the representatives of great material and commercial interests to whom these words are respectfully addressed, have abundant occasion to see to it that they have their just share in shaping the political administration of their particular locality, their State, and the nation; and the hope is reasonable, and, as we have suggested, well-grounded that, in the coming political events of this year and in the future, they will be found alive to the performance of their duty in determining who shall hold office, and what shall be the nature of coming legislation.

AN advertisement pays when it pays both advertiser and publisher. It is indispensable to successful business that both parties profit by transactions effected. An interesting commentary on this principle of trade is afforded in the fact that a considerable proportion of the advertisements which appear in this journal, have been standing many years.

VOLUME 57 of the AMERICAN RAILROAD JOURNAL is completed with this issue. The April number will contain an index covering the principal contents of the volume now concluded.

A CORRESPONDENT of a Western paper says: "We sorely need some restraining influence upon irresponsible interference in railroad management. I use the words irresponsible and management advisedly, the first because those who administer the laws are responsible to no living authority for the consequence of their acts, and the owners of railroad property who suffer these consequences are absolutely without redress for their mistake, whether these errors are the result of ignorance or ill will, and because those things the doing of which constitutes the very essence of management, are transferred from those appointed by the owners to those appointed by the State."

AFTER reviewing the speed attained by the fastest trains in England, our old friend Herapath observes with patriotic complacency: "On the whole we may feel proud of our English lines. How favorable is the contrast with the twenty miles per hour pace on the Continent and the scarcely more expeditious average time on American lines."

### Railroads in Massachusetts.

THE Fifteenth Annual Report of the Board of Railroad Commissioners, Massachusetts, just received, states that the total length of railroads belonging to the corporations making returns, considering double track and sidings as additional single track, and omitting fractions, is 4,718 miles, an increase during the year of 142 miles. Of this total length 3,340 miles are in Massachusetts, an increase of eighty-three miles for the year. The average cost of a standard gauge road, with equipment, is $67,100. Narrow-gauge roads cost $29,634.00 per mile, and $6,853.09 additional per mile for equipment. The number of corporations making returns is sixty-five, a net decrease of two. The New York and Boston Inland has been added to the list, and the Lee and Hudson and Olean Terminal have been dropped, their charters having expired. The Middlesex Central has been consolidated with the Boston and Lowell.

The aggregate capital stock, September 30, 1883, was $122,367,572.27, a decrease of $608,689.99, resulting from the decrease of $3,073,100.00 from the consolidation of the Boston, Clinton, Fitchburg and New Bedford with the Old Colony; a decrease of the Middlesex Central of $280,000.00, the road being purchased by the Boston and Lowell, and a decrease in the Lowell and Framingham of $4,600.00, and also from the expiration of the charters of the Lee and Hudson with $235,284.99, and the Ocean Terminal with $2,000.00 of capital stock. On the other hand, there has been an increase of the Old Colony of $2,714,820.00, the Milford and Woonsocket of $17,475.00, the Milford, Franklin and Providence of $70,000.00, the Providence, Webster and Springfield of $30,000.00, and the Boston, Revere Beach and Lynn of $97,000.00. The New York and Boston Inland has obtained a charter with a paid-up capital stock of $500,000.00.

The net debt of the companies—the gross debt less cash assets—amounts to $72,933,200.93, an increase of $1,019,484.93. On the other hand, the cash assets of all the railroad companies of the State have increased to the amount of $965,305.01.

The total gross income for the year is $43,380,387.63, an increase of $2,534,017.53, or 6.2 per cent.

The total expenses—including rents paid—of all the corporations amounted to $32,479,907.71, an increase of $2,535,740.56. The net income was $10,900,479.92, being a decrease of $1,726.03. The passenger earnings were $20,602,280.13, an increase of $1,035,014.42 over the year 1882, when they amounted to $19,567,274.71. The freight earnings were $21,033,511.26, an increase of $1,506,416.72, or nearly eight per cent. over those of last year, which amounted to $19,527,094.54.

The local passenger earnings were $13,652,320.69, an increase of $972,686.18 over the figures of last year, which were $12,679,634.51. The through passenger earnings were $5,245.265.19, an increase of $82,943.77 over the amount for last year, which was $5,162,321.42. The express, mail, and other earnings included in total passenger earnings, as given above, amounted to $1,704,703.25, being a decrease of $20,615.53, this item having been, in 1882, $1,725,318.78. The local freight earnings were $10,861,206.85; in 1882 they were $9,955,675.74, showing an increase of $905,531.11. Through freight was $10,104,560.63, against $9,408,552.43, an increase of $696,008.20.

The income from all other sources of the freight department amounted to $67,743.78, as against $162,866.37, a decrease of $95,122.59.

The increase of passenger mileage—or passengers carried one mile—for the year amounts to 50,925,451. The increase of freight mileage, or tons of freight carried one mile, amounts to 90,753,766. The total number of passengers carried was 61,530,747, showing an increase of 5,662,053 over the previous year. The whole number of tons of freight carried was 20,202,881, as against 19,061,164; showing an increase of 1,141,717 tons.

The average sum earned on each mile of main track and branch operated was $12,946.46; or, computing double track as additional single track, the average per mile was $10,055.88. The average earnings per mile, on the eight roads of standard gauge terminating in Boston, was $13,258.60, being an increase of $630.18 per mile.

The net income of 1882–83 was earned by the several corporations in the following proportions as compared with their permanent investments:

| | | | | | |
|---|---|---|---|---|---|
| 17 companies with | $ 9,912,000 | permanent investment | had | no net income. | |
| 14 " | " 39,497,000 | " | " | " | 3½ per ct. or less. |
| 13 " | " 14,868,000 | " | " | " | 3½ to 5½ per ct. |
| 10 " | " 71,953,000 | " | " | " | 5½ to 7½ " |
| 5 " | " 27 688,000 | " | " | " | 7½ to 9½ " |
| 5 " | " 34 982,000 | " | " | " | 9½ to 12½ " |
| 64 companies, Troy & Greenfield not included..... | $198,899,000 | " | " | " | net income, rents not deducted, of 6.4 per cent. |

The total amount of dividends paid was $6,379,721.10, an increase of $108,581.24 over last year. Of the sixty-three corporations, thirty-four paid dividends varying from two to ten per cent.

The average cost of running trains one mile during this year on all roads reported, has been $9.949.

During the year, 308,228 miles of steel rail were laid, as against 331,239 laid last year, making the whole amount now laid 2,774.431 miles: being nearly seventy-seven per cent. of the total of main line, including double track.

The increase in the number of locomotives during the year has been sixty-four, and of passenger cars, 132; mail and baggage cars have increased nineteen; freight and miscellaneous cars have increased 1,626.

The average number of persons employed by the railroad corporations was 29,844, being 2,441 more than in the year before. The whole number employed by all the corporations making returns to the Board, 33,385.

Railroad accidents in Massachusetts during the railroad year, resulted in injured persons 524, being 110 more than the number for the year ending September 30, 1882. Of these, sixty-four were passengers, the number last year being twenty-seven. The number of persons killed was 191 against 163 for last year. Of this number, fifteen were passengers, fourteen of whom died as the result of accidents caused by their own misconduct or negligence. One was killed without such negligence while riding as a favor on a freight train in violation of rule, but in accordance with a practice known to the managers of the road. It may, therefore, be said, that no passenger riding in a passenger train has been killed during the year except from his own fault. The number of employés injured, not fatally, was 203; the number killed was sixty-two. The number of trespassers killed during the year was ninety-three; the number injured, not fatally, fifty-four. Of the whole number, 112 were unlawfully on the track, and thirty-three were unlawfully in the cars. Only three are reported as suicides.

The number injured at highway crossings was twenty-nine; the number killed was fifteen. Of the whole number, forty-four, the number injured or killed at crossings with gates or flagmen was eighteen. The number at crossings not so guarded was twenty-six. Among the train accidents, nine were rear collisions, resulting in four injuries and one death. Ten were butting collisions, resulting in nine deaths and thirty-six injuries. In all, there were nineteen collisions with ten fatal injuries and forty not fatal. Twenty-five derailments occurred, killing one person and injuring fourteen. Collisions with vehicles at crossings numbered twenty-two, resulting in two fatal injuries to persons and nineteen not fatal.

The amount of damages for personal injuries paid this year by the eight roads of standard gauge terminating in Boston, is $138,580.33.

### Report of the Railroad Commissioners of Iowa.

We are indebted to the railroad commissioners of Iowa for a copy of their sixth annual report, for the year ending June 30, 1883. Appended are the chief facts contained in said report, showing the condition of the railroad interest in the State named.

The total number of miles of railroad in operation in Iowa is 7,015; 5,876 owned by the companies operating them, and the balance leased. Only forty-seven miles of double track. The report of the capital stock and debt is based on the entire lines of the roads which run into other States. The entire mileage of these roads is 26,685. The companies estimate that the stock of these roads representing the portion of them in Iowa, added to the stock of the roads entirely in Iowa, amounts, broad gauge roads, to $132,895,478.00, or $19,811.00 per mile; the narrow gauge roads, to $1,386,991.00, or $6,481.00 per mile. Stockholders in the State, 671, holding $5,164,591.41. Narrow gauge roads owned by the Chicago, Milwaukee and St. Paul road are estimated with the broad gauge lines. Total debt of the roads, broad gauge, $126,456,879.00, $18,863.00 per mile; of this $120,534,557.00 is funded and $5,932,322.00 unfunded; narrow gauge, $1,345,000.00, or $6,170.00 per mile; of this $1,333,000.00 is funded debt, and $12,000.00 unfunded. Amount of stock and debt, $262,094,348.00, or $37,864.00 per mile. Increased mileage for the year, 2,134; increased indebtedness, $33,079,210.11; deducting the decreased indebtedness, the net increase is shown to be $29,773,762.46, representing both new mileage and lines purchased. The estimated cost of roads in Iowa is $246,495,001.77.

Total earnings for the year ending June 30, 1883, were $34,433,354.77, an increase over previous year of $2,409,388.74; operating expenses for the year, $22,827,450.50, leaving the net earnings $11,605,904.27.

The property accounts of the roads have increased during the year $38,168,299.50; properly belonging to the roads in Iowa, $17,811,305.50. Taxes paid by the railroads in the State, $830,655.67, or 7 16-100 per cent. of the net earnings.

Fifty per cent. of the entire roads in the State, exclusive of sidings, is steel rail; only twenty-two per cent. in 1878.

Seventy-nine per cent. of the freight of the Iowa roads is inter-State in its character.

Total number of locomotives, 3,104; cars, 98,106, of which 1,244 are passenger cars, 713 baggage, mail, and express cars, 118 parlor, sleeping and dining cars, 57,771 box freight cars, 12,074 stock cars, 18,599 platform and coal cars, and 7,587 other cars. The speed of passenger trains varies from twenty to twenty-six miles per hour; that of freight trains from ten to sixteen. The average rate of freight charges of all the roads reporting is 1 24-100 cents per ton per mile.

The total number of persons employed regularly in operating the roads of the State is 27,112; amount paid for their services in the year, $13,164,288.07, or $1558,383.80 more than the earnings of the roads above operating expenses and taxes; or "in other words," add the commissioners, "the entire capital stock and debt realize this much less from the property than the labor alone in operating it. This might be a subject well worth the attention of the economist."

During the year 151 persons were killed, of whom four were passengers, eighty-two employés, and sixty-five others in no way connected with the roads in its operations or movements. Persons injured during the year, 330. Killed, fourteen fewer than the previous year; injured, 305 fewer.

The net amount realized by the railroad companies from land grants by Congress is given at $11,444,478.94.

### St Louis, Vandalia and Terre Haute.

The annual meeting of the stockholders of the St. Louis, Vandalia and Terre Haute Railroad Company, was held on the second Tuesday in January, at the office of the company, Greenville, Illinois. Joshua S. Peers was made chairman, and Williamson Plant, secretary. Having accepted the president's report for the fiscal year ending October 31, 1883, the meeting elected the following gentlemen directors: Thomas D. Messler, J. N. McCullough, William Thaw, W. R. McKeen, Robert L. Dulaney, Abraham McNeill, A. G. Henry, Charles H. Seybt, and J. S. Peers.

The president's report of the operation of the road by the lessee during the year, and the financial condition of the company October 31, 1883, showed gross earnings, $1,700,954.06, an increase of $104,828.59 over the earnings of the previous year. Expenses for the year were $1,306,067.12, an increase of $118,507.05 over those of the previous year. The total miles of track owned by the company, and in use at the close of October 31, 1883, was 200 $\frac{3}{1000}$ miles. During the year 34 $\frac{23}{100}$ miles of track were relaid with steel rails, and 38 $\frac{73}{100}$ miles ballasted, leaving but six miles of the main track to ballast. No change has been made in the capital stock, funded debt, or other liabilities, excepting a slight decrease in the amount of coupons for interest not presented for payment. The cost of the company's property was increased by purchases of real estate and payment for right of way, to the amount of $228.25. The balance due by the lessee was increased from $215,530.76, October 31, 1882, to $342,076.08, October 31, 1883. From this there was payable at November 1, 1883, $91,000.00 for interest on the second mortgage bonds, leaving a net balance of $251,076.08, besides the balance in the hands of the treasurer, of $3,144.77. The officers for 1884 are: President, Thomas D. Messler; treasurer, John E. Davidson; secretary, Williamson Plant.

### Report of the Illinois Central.

THE report of the directors to the shareholders of the Illinois Central Railroad Company for the year ending December 31, 1883, states that the gross sum received from the traffic of the entire line of 1,928 miles during the past year was $13,064,743.39. This is an increase of $403,035.31 over the gross earnings of 1882. The net receipts from all sources last year were $5,764,391.95. From this fund were paid $538,750 interest on debt, $50,000 in bonds drawn under sinking fund, $1,486,203.50 for the rental of the Chicago, St. Louis and New Orleans Railroad, and $632,529.66 in permanent expenditures in Illinois and on the Southern Division. A balance of $3,056,908.76 remained, out of which the regular dividend of 4 per cent. and an extra dividend of 2 per cent. will be paid. A surplus of $156,908.79 will be carried to the surplus dividend fund.

Work has advanced on the various extensions of the road during the past year. It is expected that the Canton, Aberdeen and Nashville Railroad will be opened for traffic in May next, and the Yazoo and Mississippi Railroad some time in March. The further outlay necessary to complete these roads is estimated at $325,000. The directors believe that these roads will not only pay a fair return upon the capital invested, but will also prove valuable feeders to the main trunk of the Southern Division. The outlays during 1883 on capital account, not provided from the income, were as follows: Middle Division, $77,503.43; South Chicago Railroad, $63,296.87; Canton, Aberdeen and Nashville Railroad, $1,463,313.83; Yazoo and Mississippi Valley Railroad, $575,709.36; Iowa Division, $80,487.10; total, $2,260,310.59.

### Lehigh Coal and Navigation Company.

THE report of this company, submitted at the annual meeting of the stockholders, held February 26, states that the total revenue for the year was $2,194,489, and the disbursements $1,249,845, leaving net earnings of $944,644, from which, after making sinking fund charges, accounting for depreciation on coal improvements, and paying two dividends, there was a balance carried to the credit of the dividend fund of $130,476. The coal tonnage of the Lehigh and Susquehanna Railroad and the Lehigh Canal for the year was 5,152,218, being an increase, as compared with 1882, of 486,367 tons. The canal traffic shows an increase over the previous year of 61,357 tons.

After referring to the agreement with the Philadelphia and Reading Railroad Company, under its lease of the Central of New Jersey, the report says: "While we have thus protected our interests, we feel that the Philadelphia and Reading Railroad Company will have great advantages in the possession and use of our railroads, which enable them to handle the great growing traffic between New York and Central and Northwestern Pennsylvania more cheaply than they could over their own longer lines, and as all our relations with them since the lease have been harmonious, we have no doubt that it will largely conduce to the best interests of both parties. The transportation of the tonnage of the Alliance Coal Company has been permanently secured to the Lehigh and Susquehanna Railroad Company, and the business from this source is expected shortly to amount to 300,000 tons annually."

### The Stewart Bill to Regulate Inter-State Commerce.

A CORRESPONDENT of the New York *Times* writes that the bill to "regulate inter-State commerce and establish a Railroad Commission" introduced in the House of Representatives at Washington by Mr. Stewart, of Vermont, is a measure of no ordinary importance. It is the first step in the way of conciliation and mutuality between the railroads and the public. It reflects the opinions of a very large majority of the Committee on Commerce and of members of both houses who have studied the subject, and of some of the most experienced railroad managers in the country.

The first section of Mr. Stewart's bill defines the words "inter-State commerce," "railroad company," "traffic," and "rebate." Three sections follow which define and are intended to secure reasonable rates, and to prohibit undue or unjust preferences, discriminations, advantages, or prejudices in favor of or against any person, place, or traffic; to secure uniformity of rates to all persons under like conditions, and to prohibit all combinations to maintain unreasonable rates, to prevent competition, and to injure inter-State commerce. The remaining nine sections establish a commission of three persons, of whom one shall be experienced in the law and one in railroad business. This commission is charged with the duty of securing obedience to the act. Any citizen may present his petition charging that any railroad company has violated the act. The commission may exercise its discretion except when the petition is presented by a commercial body, or when it is approved by a district attorney of the United States, in which cases the commission must take proceedings. The first step is to notify the company charged of the contents of the petition, so as to give it an opportunity of taking satisfactory action. If it fails to do so, it is required to answer the petition in writing, after which the commission, by its own examination or through a referee, proceeds to ascertain the facts and make report in respect to the alleged violation. If the act has been violated, the company is to be notified to cease such violation. If it does not within six days, the commission transmits a copy of its report and findings to the Circuit Court of the United States for the proper district, which court is to be at all times open for these proceedings. It is made the duty of the district attorney to apply for an injunction to arrest the violation. The court is to proceed summarily to ascertain whether the violation exists, and if it does exist an injunction and other remedial process may be issued to restrain the company violating the act. Any person injured may appear in person or by attorney. The court may award costs in its discretion, and if the violation is found to be willful or to have been committed after notice by the commission, the court may award a sum for costs large enough to reimburse the petitioner for all his costs, charges and expenses. Any person injured may bring a private action in the proper Federal court, and may, in the discretion of the court, recover treble damages and full costs. The commission must annually report to Congress all its proceedings, with recommendations concerning legislation. The bill is in great part taken from the statutes of Great Britain. The commission is not, like the English commission, given judicial powers, such powers being prohibited by the Constitution. The commission may compel the production of all books and

papers and the attendance of witnesses, and is given full and complete powers of visitation over all companies engaged in inter-State commerce.

### New English Railway Patents.

THREE tunnels are so combined that any one can be employed to supply air near the center by a forced ventilation to the other two, which are each for a single line of rails. Latch locks for railway carriage doors, etc., are constructed with springs so applied as to retain the latch in either the locked or unlocked position, and with two inclines upon the striking plate, one to raise and the other to press the latch downwards. The plunger and its collar of railway buffers are so fitted that the collar can be adjusted and fixed on the plunger to retain the same in the box or case, and can be readily removed to allow of the withdrawal of the plunger. A spring or elastic body is arranged between the collar and the bushing or thickened end of the box or case, to check the recoil of the plunger. An apparatus for electric lighting on railway trains, etc., has generators driven by the motion of the train, and made to charge accumulators from which the electric lamps are supplied, and the object of the invention is to effect the automatic reversal of the commutator brushes on the reversal of the motion of the generator; the commutator brushes are arranged in two pairs carried by swing frames, one pair only being in contact with the commutator at any moment.

An improvement in trucks or rolling stock, chiefly for narrow-gauge railways, consists of a platform which is carried by two small bogies with two axles each, in such a manner that the bogies can move under the platform within certain limits independently of one another; each of the bogies carries an annular metallic guide-way upon which rollers work, the rollers being mounted loosely in couples upon axles running loosely in bearings fixed on the underside of the platform. To adapt railway vehicles to lines of different gauge, a pair of wheels corresponding with the gauges of each railway over which the vehicles have to travel are arranged upon each axle. In compound engines, especially applicable to compound locomotives, the links of the valve gears of the high and low-pressure cylinders are arranged to be controlled by one hand-lever, so that the grades of expansion to which the two links are simultaneously adjusted will be such as to cause the power produced by the steam in one cylinder to be approximately equal to the power developed in the other; a screw by which the hand-lever may be operated is combined with the hand-lever for controlling the valve gear, and a connecting mechanism allows the lever to be locked in any position by the screw, or be used independently thereof; a receiver or intermediate steam chamber is combined with the two cylinders which can be shut off from the said receiver, the high-pressure cylinder being caused to exhaust into the atmosphere while the low-pressure cylinder is supplied direct from the boiler. The object of an invention to electrically indicate the movements and passage of trains on railways, is to provide a safe and thoroughly reliable electrical contact maker, in the form of a treadle over which all kinds of railway and other rolling stock may safely pass and actuate without damage to such treadle, and which is arranged to be free from weather interference. In an apparatus for working brakes and springs of railway vehicles by fluid pressure, a steam piston and cylinder, opposed by a vacuum cylinder and piston, the two pistons being on the same piston rod, or if necessary working indirectly, are arranged on the engine or tender; the steam piston is operated on by the steam or water in the locomotive boiler, and the vacuum piston by the vacuum in the main pipe; when the vacuum is destroyed in the main pipes the steam piston overcomes the vacuum piston, and thus applies the brake; when the vacuum is formed in the main pipe, the vacuum piston overcomes the steam piston, and thus takes off the brakes. In compressed air brakes the vacuum cylinder is replaced by the compressed air cylinder. The object in an electrical signaling and inter-locking apparatus for railways, is to render the ordinary needle telegraph instruments available for interlocking with and controlling the point and signal levers.

### Engineering Absurdities.

BY WILLIAM S. HUNTINGTON.

ANY one who reads the engineering publications of the day cannot fail to notice that much interest is manifested by the engineering fraternity of late on subjects that have heretofore been considered of too little importance to engage the serious attention of the profession; or rather, to state it in another way—in giving old ideas an airing. Some of these when weighed in the balance are found wanting and are cast aside, while others on being brushed up prove valuable and worth preserving. When the first T-rails were worn out in this country the general verdict was that the form of the rails was good but that they were too soft for durability. They soon battered up at the ends and needed to be repaired. Now if a man wished to batter a piece of iron under the blows of a hammer, he would not lay it on a fleece of wool, he would prefer a rock, or better still, an anvil. When we got our first-T rails they were laid on heavy cast-iron chairs on broad ties. This made an anvil or anvils, and the wheels made rapid work of destruction by pounding out the rails thereon. There were no broken rails in those days. Some roads found a partial remedy for this rapid pounding out of rails by removing the cast chairs and substituting thin wrought plates; but almost every one argued that the rails were too soft, and the way out of the difficulty was to make them hard. They were accordingly hardened, and then to get the anvils from under the ends, fish-plates were used. Holes were, moreover, drilled or punched in the neck, thus weakening the rails, and breakages were the order of the day. The rails were durable but they would break.

If a man stood on the roof of a house hauling on a rope, he would naturally slide off unless he had a bracket or cleat on which to rest his feet. The upper side of the base of a rail is not unlike the roof of a house, and the underside of the head more so, and reversed. Yet it is expected that a couple of fish-bars will stand on these slippery inclined planes, and hold up ever so many tons, which are constantly passing and repassing with a great deal of jar, strain and vibration. It may be said that the bolts will prevent the "feet" from slipping. This is true to a certain degree, but from the very nature of things the bolts afford a very imperfect protection. In fact the

whole arrangement is the very essence of imperfection. But it is far easier to discover a fault (in this case) than to provide or even suggest a remedy.

Have you ever witnessed a crowd of people on the streets at midnight, called out by an alarm of fire? And did you notice that everyone was dressed in a rather loose sort of manner; everything in a slipshod, down at the heel, unstrung, unlaced, unbuttoned condition, everything loose and "shackley?" Well, an hour's walk on many of our average tracks would remind one of such a crowd of people. For miles you would not see a single joint in a perfect condition; not a splice bar giving support to the rails. And yet thousands of miles of tracks are being laid every year with those (so-called) joint fastenings.

Recent investigations have shown unmistakably that the soft rails are the most durable so far as wear is concerned, and a return to soft rails will most assuredly prevent accidents from broken rails. Steel rails are now in use that are no better than cast-iron, and the sooner they are re-rolled and improved the better. With a return to soft rails we may reasonably expect a radical change in the style of joint support and, doubtless, some sort of chair will take the place of the abominable fish-bar now so common. It is not expected that the old "anvil chairs" will ever again come into use, but it is tolerably certain that some modification of that old-time fixture will supersede the fish-bar. A half-inch wrought plate chair resting on a broad joint tie on good ballast is far superior to the poorer class of fish-bar joints, but the coming joint will, in all probability, consist of a steel chair or rather "grip," clasping the ends of the rails and suspended between two ties. More than twenty-five years ago the writer used heavy cast chairs with strong lips on both sides, which fitted the rails snugly. These chairs were used on bridges in New England and were placed between two ties. The rails on these bridges wore evenly, the ends keeping of the same form as other portions of the rails. No matter how little elasticity there is in a track, there is always a slight depression of the rail in advance of the wheel, and no joint fastening is perfect unless the next rail is depressed exactly as much as the one on which the wheel rests before reaching that next rail, as was the case on the bridges referred to. Perhaps when we get back to soft rails and steel clasp chairs (not anvils) the wear and tear and breakages will be greatly diminished. Another matter in this connection which needs looking after is to get a standard rail section. This we can get by going back a quarter of a century. Then we had rails the heads of which were flat on the top and beveled inwardly so as to conform to the cone of the wheels of rolling stock. This gave a bearing for the wheel treads the entire width of the rail head. The advantages of this over the system Mr. Halley speaks of as making the "foot prints" of the wheels only three-quarters of an inch wide is too obvious to require mention here. But it is really a matter of wonder that such malpractice should be continued in this progressive age. It is time to do away with some of this nonsense, and either make cylindrical wheels and level, flat-topped rails, or make beveled-headed rails to conform to conical wheels; or, preferably, to make the rail head flat and parallel to its base in its cross sections. Then, in laying the rails, adze the ties so as to incline the rails inwardly, sufficient to bring the entire head in contact with conical wheel treads. This would not only protect the rails from rapid destruction by virtue of an equal distribution of wearing surface, but the wheels as well.

A year or two ago, two gentlemen who are well known and whose works may be found in every well regulated engineer's office in the civilized world, had occasion to express their views in relation to the cone of car wheels. One of the gentlemen regarded it as a "fine-spun theory," the benefits of which were more fancied than real. He argued that as wheels soon wore down so as to destroy the cone, there was no real advantage to be derived from the plan. And even if the cone was not destroyed by wear he could see no good in it. To strengthen his position he argued substantially as follows: Briefly, a cone placed on an inclined plane will travel in a curve, but place two cones in a rectangular frame, after the manner of two car axles in a truck frame, and they will not travel at all on an inclined plane unless force is applied. This is true, and the reason is apparent at a glance. Now if we hollow out these cones so as to give the cones no bearing except at the extreme ends, then the concern will travel down an inclined plane and run in a curve. The other gentlemen referred to experimented with the cones, and decided that they would not travel, but probably he gave them a bearing their entire length, which precluded the possibility of their moving by their own gravity on a slight incline. If anyone has any doubts about the advantages of the conicity of wheels, and takes any interest in the matter, he can satisfy himself by the following simple experiment: Procure two empty thread spools, large ones, and plug up the holes with soft wood. Get a block of wood, the merest trifle thicker than the spools are long, and about 3½ inches long. Some pieces of a cigar box, or some stiff card-board will do. Cut the card-board the length of the block and somewhat wider. With some carpet tacks fasten these pieces to the black. Perforate the card, and run toilet pins horizontally through the holes into the centers of the plugs in the spools. You now have a truck to all intents and purposes. Let the pins work the least mite free in the holes. With a sharp knife pare off the one-sixteenth of an inch or more from the circumference of one end of the spools. Now place the affair on your table and raise one end of it (the table) gradually, and you will soon see your truck travel off on a curve. If the thing does not behave just right lay a light weight on it.

To return to the wearing off of the cone of wheels. This is owing mainly to the following causes, all of which may be removed and some millions of dollars saved by their removal. One great source of this trouble is that mentioned by Mr. Halley, to wit: the narrow "footprint" on the rail. The remedy for this has been pointed out above. Another destructive agent is steel-plated frogs. When a wheel jumps from the wing rail of a frog to the sharp steel point it loses a portion of its conicity, and for this there is a specific remedy. Another cause is the grinding away of the larger diameter of the wheel tread by brake shoes and sliding wheels. The brakes having no bearing on the tread except a narrow strip next the flange, destroy the cone. This, with sanded rails and slipping of drivers, soon makes hollow wheels. With properly formed rail heads and frogs, and brake shoes fitting the tread so as to wear away its whole surface, there should be no difficulty in preserving the conicity of wheels, of

the desirability of which there certainly can be no question.

This brings to mind that something has been said of late about widening gauge on curves. There is no question but this is beneficial under some circumstances, but it should not be overdone. Assuming that there is a benefit derived from the cone of wheels, it is desirable to get the most of it on sharp curves. In such cases (very sharp curves) a moderate widening of the gauge would be beneficial unless on a heavy grade. Perhaps the greatest advantage from widening gauge may be found on the elevated roads, where only light trains are run. With a heavy freight train on a sharp curve and heavy grade, the tendency will be to pull the wheel flange against the inner rail. In such cases the widened gauge would be an injury rather than a benefit. On the other hand, a train running in the opposite direction would be greatly relieved from coned wheels and widened gauge. Again, on a level curve on a freight road the widened gauge would be an injury to trains running in either direction. On a passenger road the widened gauge would be beneficial on grades and curves where the contrary would be the case with heavy freights. The gauge on the 60° curves of the Metropolitan Elevated Road, was widened three-quarters of an inch. Doubtless this will prove beneficial on either grades or levels on the elevated roads where there are no heavy freight trains, and the treads of wheels can be kept from wearing hollow, and no worn out foreign wheels, as on surface roads. As the rolling stock is always at home on the elevated roads, the cone of the wheels can be preserved and the widened curves will prove beneficial under all circumstances, whereas on a surface road thousands of wheels are run that are worn to such a degree as to leave the largest diameter of the tread near its outer edge. With all such wheels the widened gauge is an injury.

From the foregoing, it is clear that under some circumstances it is advisable to widen the gauge, while under others it is not. Mr. John F. O'Brien, general superintendent of the East Tennessee, Virginia and Georgia Railroad, recognizes this fact, and in his book of instructions to the roadway department (Rule No. 11), he says: "Any widening of the gauge on sharp curves will be done only under special directions of supervisor in each case." From this we are to understand that he considers the matter an important one, but of too delicate a nature to be tampered with by a person not specially skilled. And, to use a vulgarism, "that is about the size of it." In widening gauge, grades, nature of traffic, and velocity of trains should be taken into account.

A study of some of these seemingly unimportant matters would not be entirely unprofitable, inasmuch as we can never reach anything like perfection in railroading or even keep in sight of the progress made in other directions, unless we pay attention to such matters as are mentioned herein.

## "Steel and Iron."

THE latest of the manuals of Technology, edited by Professor Ayrton, F. R. S., and R. Wormell, D. Sc., M.A., and published by Cassell & Company, London, Paris, and New York, is "Steel and Iron." This work comprises the practice and theory of the several methods pursued in the manufacture of steel and iron, and of their treatment in the rolling mills, the forge, and the foundry. It is a production of William Henry Greenwood, F. C. S., Assoc. M. I. C. E., M. I. M. E., and associate of the Royal School of Mines. Mr. Greenwood's book is adapted to the wants of the general student of technical science, and of the intelligent workman who wishes to possess a succinct statement of the scientific principles upon which depends the success of the several processes conducted or superintended by him, and upon which the construction of his plant or machinery is based, thus supplementing the experience and practical knowledge gained in the works, with technical instruction. Its information has been brought up to date, and the ninety-seven diagrams embellishing the work have been produced from original working drawings, drawn accurately to scale.

"Steel and Iron" is pleasantly written, very neat and accurate in its letter-press. An exhaustive index increases its value to the student.

Having explained the terms in use in the book, its author treats on refractory materials, crucibles, etc. He then proceeds with chapters on the ores of iron, the metallurgical chemistry of that metal, cast or pig iron, and its production. Two chapters on the blast furnace, its use and management, are succeeded by instruction on castings in iron, foundry appliances, etc. Equally full information on malleable iron succeeds these, followed in its turn, by sections on the refining of pig iron, puddling, forge and mill machinery, etc., and steel and ingot iron. The five chapters completing the work are the most comprehensive and satisfactory account of the production of steel, in the various ways adopted, which we have encountered.

The work under review would be found of value to every person taking an intelligent interest in those leading modern industries comprehended in the manufacture and use of iron and steel. Its distribution among studious workpeople would serve to increase their respect for their occupation, enlarge their enjoyment of life, and improve their usefulness. "Steel and Iron" is, moreover, commended heartily to the attention of persons selecting books for mechanics' and students' libraries. Access to its pages could not result otherwise than in the intention to possess a cheap manual which is teeming with useful information, very pleasantly conveyed.

A NEW route is to be opened which will be advantageous to the commercial interests of San Francisco. This will be by means of the Oregon Pacific Railway, having its western terminus at Yaquina Bay and its eastern terminus at Boise City, Idaho Territory. The new road will run through the most fertile valley (the Willamette) in western Oregon, and tap in eastern Oregon a very large section composed of gradually rolling hills which is capable of being brought under the plow and turning out well to the acre. From Yaquina Bay to San Francisco, connection will be made by steamer. The pioneer in the line sailed from New York, February 22, for San Francisco en route to Yaquina Bay. The railway from Yaquina Bay is expected to reach the Willamette Valley in full time to help move this year's crop, and within a year or a year and a half thereafter extended to Boise City. It is expected that the construction of the new road will serve to make up, at least in part, for the blow San Francisco received by the construction of the Northern Pacific Railroad.

# A RETROSPECT:

BEING

## A Complete History of Railroad Progress in America.

*Compiled from this Journal, beginning Fifty-two years ago.*

### CHAPTER III.

INCORPORATION OF THE HUDSON AND DELAWARE RAILROAD—BALTIMORE SEEKS RAILROAD COMMUNICATION WITH PENNSYLVANIA—SHELBY COUNTY, KENTUCKY, ALL ALIVE FOR THE NEW IMPROVEMENT—INCEPTION OF THE ERIE—CONVENTION AT BINGHAMTON TO FURTHER A PROJECT FOR CONNECTING OWEGO WITH NEW YORK CITY—THE GRAND CENTRAL IN EMBRYO—INCORPORATION OF A RAILROAD IN OHIO—WHAT GOVERNOR THROOP HAD TO SAY ABOUT CHARTERS FOR RAILROAD COMPANIES.

AN act of incorporation under the title "Hudson and Delaware Railroad," for the construction of a railroad from the village of Newburgh, through the county of Orange to the Delaware River, was passed by the New York legislature, April 19, 1830. During the summer of 1831 a survey of the various proposed routes was made under the direction of H. G. Sargent, of Fort Anne, Washington County, and January 7, 1832, a correspondent of the JOURNAL was able to say: "This railway will strike the Delaware River at or near Carpenter's Point, where it will come into connection with the Delaware and Hudson Canal. From the Delaware River, it is intended, under a charter from the State of Pennsylvania, passing the village of Milford, and crossing over Cobb's Gap, to enter the valley of the Lackawanna in the very heart of the coal region; here a junction will be formed with the Lackawanna Railroad (the stock of which we are informed has been practically engaged), which terminates at or near the Great Bend of the Susquehanna, thence along the level banks of that river to Owego, where we unite with the Ithaca and Owego Railroad, thus forming a complete communication from Ithaca by railways, to the village of Newburgh." Accompanying the article from which this quotation is made, is a letter from the pen of H. G. Sargent, in which he says he has not "the slightest doubt the construction of the road will offer a safe and lucrative investment of capital, even if the work should cost double the amount." His conviction was based mainly on the conclusion that the want of fuel in New York, and in all the cities and towns from New York to Troy, and in the cities and large towns bordering on the Atlantic east of New York, made some other communication with the valley of the Lackawanna than that afforded by the Hudson and Delaware Canal, "absolutely necessary." The JOURNAL'S correspondent gives great significance to the announcements that "part of the capital of the Hudson and Delaware Railroad has been already subscribed, and as soon as the Engineer's Report is published, books will be opened in the city of New York, for the subscription of the balance not taken up," by preceding them with the following solemn declaration: "I do not think that I hazard anything in affirming that by means of this work a load of coal may be taken from the mines and landed in the city of New York in the course of twenty-four hours, the speed required not exceeding seven and one-third miles per hour."

The intention of connecting Paterson, New Jersey, with the Hudson River, opposite New York, was formed early in the history of railroads in this country. A company was incorporated for this purpose by an act of legislature of New Jersey, on the twenty-first of January, 1831, with the capital of a quarter of a million and the power to enlarge it to half a million. Work was begun forthwith, and by the early part of January, 1832, only a month's work was necessary to the completion of the road as far as Paterson Landing, a distance of five miles. Whether in order to complete the road, Bergen Hill should be tunneled or not, agitated the minds of the persons interested in the construction of the road, but the hope was indulged that by the next fall the entire road would be completed and operated, at no greater expense than $250,000.

In the early part of 1832 the "Oxford Railroad Company, of Chester County" had not built the road to construct which they had procured a charter as far back as 1828. Their concession gave them the right to construct a railroad "from a point intersecting the Pennsylvania Railroad in the great valley in Chester County, to the Maryland Line, in a direction to Port Deposit." Taking this fact into consideration the inhabitants of the upper part of Cecil County, in meeting assembled, voted affirmatively on a preamble approving the project of the Oxford Railway Company, and a resolution appointing a committee to draft a memorial to the Senate and House of Delegates of Maryland, praying an act of incorporation to a company "by the name and style of the 'Baltimore, Port Deposit and Maryland Line Railroad Company,'" with the object of securing railroad communication between Baltimore and Port Deposit, thus connecting Baltimore with the road projected by the Oxford Railroad Company of Chester County.

In many parts of the United States, about the time when our "No. 2" was published, the disposition to construct railways was evidenced by enthusiastic meetings and very practical resolutions. Said publication, date January 7, 1832, records a meeting of the inhabitants of Shelby County, at Shelbyville, Kentucky, at which resolutions were passing protesting against the pretermission of "the great commercial trade of Shelby county" in the route proposed by the Lexington and Ohio Railroad Company, and appointing a committee to prepare such information as to said trade, for presentation before the directors of that company, as would lead to the route being changed so as to include Shelby county.

Delegates from the New York counties of Chautauqua, Cattaraugus, Allegany, Steuben, Tioga, Broome, Chenango, Delaware, Otsego, Greene, Sullivan, Tompkins and Seneca, eighty-six in number, met at Owego, December 20, 1831, and resolved: "That it is expedient that application be made to the legislature of this State, at their ensuing session, for the incorporation of a company with the necessary privileges, to construct a railroad from Lake Erie, commencing at some point between the mouth of Cataraugus creek and the line of Pennsylvania, and to run

from thence, through the southwestern tier of counties, by the way of the village of Owego, to the Hudson River, or to connect with railroads already chartered, or otherwise, as may be deemed most advisable, with a view to reach the City of New York, by the best railroad route, with a capital of $5,000,000." A committee was appointed to draft the memorial to the legislature, and the convention adjourned after having expressed its approval of the application to the legislature, for the construction of a railroad from Ithaca to Geneva.

Five days prior to this gathering, so fruitful in important consequences, delegates from counties of New York and Pennsylvania, met at Binghamton, and particularly united in and approved of the application for a railroad from the termination of the Ithaca and Owego Railroad, at Owego, to the City of New York, as immediately affecting their own interest; and appointed a committee to prepare and circulate a memorial to the legislature, embracing all the advantages contemplated in the said project. This convention also formally approved of the contemplated application for a railroad from Ithaca and Geneva, and of the projected line from Owego to Lake Erie.

The practicability of constructing a railroad from Albany to New York engaged the attention of a meeting held at Hinsdale, on the twenty-ninth of December, 1831, which passed resolutions that deprecated the connecting of the two cities by any route outside of New York State, and urging the greater directness of the way from New York city "through the counties of Westchester, Putnam and Dutchess, to Hinsdale, in the County of Columbia, thence to some point on the river opposite the City of Albany," over a contemplated circuitous way through a part of Massachusetts and Connecticut. The meeting passed, moreover, a resolution which is hereby commended to the appreciation of very States-loyal people: "Resolved, That in the opinion of this meeting, our enlightened legislature will not grant a railroad, any part of which shall, without a natural necessity, be in any adjoining State (consequently beyond their control), thereby conferring great lateral advantages on citizens of such State, in preference to her own constituents."

Ohio could not well be missed in this review of railroad activities. The JOURNAL quotes from the *Dayton Journal*, of December 27, 1831, as follows: "The bill to incorporate the Mad River and Lake Erie Railroad Company, passed the Senate on Saturday, with a few slight amendments, which would no doubt be agreed to by the House; so that the bill will become a law. It provides that the capital stock shall be one million of dollars, in shares of $50, with liberty to increase it to two millions; and authorizes the commencement of the work as soon as $50,000 are subscribed. It gives the company the right to construct a double or a single railroad from some point in Dayton to Springfield; thence to Urbana; thence to Bellfontaine; thence to or near Tiffin; thence to Lower Sandusky City. The bill passed the House on Wednesday last, with only three dissenting votes, and in the Senate there was only one vote against it." "The length of this railroad," adds the editor of the AMERICAN RAILROAD JOURNAL, "will be about 115 miles."

In his very comprehensive message, dated "Albany, January 3, 1832," Governor E. T. Throop had this to say about the new way of conveyance:

"Railroads are of modern invention, more simple and less expensive than the Roman, French, or Dutch roads, and probably better adapted to a cheap, safe, and rapid transmission of persons and commodities. There is reason to believe that for great thoroughfares, they will not only supersede every other kind of road, but enter into a successful competition with canals also. They are not so well adapted to general use as either roads or canals, because they will admit upon their track none but public vehicles of a peculiar construction.

"The directors of the Liverpool and Manchester Railroad in England, say, in their report made last May, that they have been able to reduce the price of carrying goods one-third, and of passengers one-half; that the railway is peculiarly adapted to the conveyance of heavy and bulky articles, and that the conviction is now general, that traveling by the railway is the safest, as well as the cheapest and most expeditious.

"The public papers have announced that numerous applications will be made to you for charters to construct these roads in various parts of the State; and the question will be presented for your decision, whether joint-stock companies shall be created to make them, or whether this kind of improvement shall be no further extended. If it should be deemed expedient to progress in these works, then the embarrassing questions will arise, how many shall be made, under what restrictions, and what routes shall be selected.

It is very obvious that a long period must elapse, that this generation and many others, and even centuries will pass away, before all those improvements, which are worthy the enterprise of the government, and which in time will be wrought, can be undertaken upon the public means alone. Shall we then forbear to possess ourselves of these advantages, if they can be obtained without imposing public burthens? Charters create monopolies, which are odious to a certain extent, and ought not to be granted, except to accomplish some great public good which cannot be effected without them. The good to be effected, as well as the impossibility of attaining it through other means than private interest, is manifest; and I trust that some of the most meritorious of these applications will receive your sanction with proper reservations.

"By inserting the clause, now so common in charters, saving to the legislature the power to alter, modify and repeal them, and by reserving to the State the right to take possession of them as public property at pleasure, on equitable terms, charters for railroads may become eminently promotive of the public good, and I do not hesitate to recommend them as worthy of your profound consideration.

"In lending a favorable ear to those projected improvements upon routes contiguous to, and intersecting our canals, or pointing to the sources of their trade, the legislature should be extremely careful to do nothing which may interfere with the canal revenues; or retard the payment of the debt. It is supposed that companies may be formed to take charters for railroads upon the most important routes, with the condition of paying into the public treasury such rates of toll, that no loss of revenue will result from their interference with the business of our canals."

The reader is left to digest the departed governor's wisdom at his own sweet leisure.

(*To be continued.*)

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MR. ARTHUR E. RENDLE, of New York, has been awarded the contract for the erection of the Horticultural Hall of the World's Exposition, New Orleans. The building will be permanent and the largest conservatory in the world. It will be 600 feet long and 194 feet wide, with a central tower ninety feet high. Work was begun this month. Twenty-five feet on the sides will be devoted to foreign and domestic plants and flowers, the central space being reserved for a display of 20,000 plates of fruit from all parts of the world. The Art Hall will include a marble building constructed of blocks from the various States. The main hall will be cruciform, with the walls of glass. Immediately inside of the walls, and running along all the sides of the building, tables for flowers will be placed. At one end there will be a boiler to warm an orchid-house. A glass partition will separate the flowers from the fruit, and under the tower in the center, a pyramid of plants is to be constructed.

THE longest river in the world is the Mississippi, reckoning from the source of the Missouri, being 4,500 miles, or equal to the combined length of about thirty-three millions of Esterbrook's mammoth falcon pen and penholders.

## Railway Matters in Canada.

SUMMARY OF PROPOSED RELIEF FOR THE CANADIAN PACIFIC—MR. WOOD'S ARGUMENT IN ITS FAVOR—THE FINANCIAL CONDITION OF THE COMPANY—ITS CONTROL OF EASTERN CONNECTIONS—GRAND TRUNK OPPOSITION—MR. VAN HORNE'S MODE OF DEALING WITH IT—DIFFICULTIES OF THE JACQES CARTIER RAILWAY COMPANY—THE PROPOSED SOURIS AND ROCKY MOUNTAIN RAILWAY—MILEAGE IN THE PROVINCE OF ONTARIO.

THE proposed relief to the Canadian Pacific Railway Company is summarized as follows: "The Government is to make a loan to the company of $22,500,000, till the 1st of May, 1891, at five per cent. interest, to be secured by a first lien on the entire property of the company, now owned or hereafter to be acquired, including the main line, extensions and branches, together with rolling stock and steamers. On the extension from Callander to Brockville and Montreal an existing mortgage is to retain its priority. Should the company go into default, twelve months, either in the payment of interest or capital, the property mortgaged shall, *ipso facto*, and without notice or proceeding of any kind, vest in Her Majesty, and be taken possession of by the minister of railways. To enable the company to pay its floating debt, an immediate advance of not more than $7,500,000 is to be made."

In the House of Commons debate on the Government proposals as above, Mr. Wood (Westmoreland) has made a notable speech advocating their passage. He said that the advantages to follow a speedy construction of the line would be a speedy development of the great country which it traversed, and a rapid development of transcontinental trade. The powerful influence which the rapid completion of this railway would exercise over the growth of Canada was incalculable. In deciding on the mercantile aspect of this loan, of course the extent and value of the security was a paramount consideration. Supposing it was proposed to the Government to purchase back the lands here offered—twenty-one million acres at one dollar and fifty cents per acre—the House would unanimously adopt the proposition as being a paying investment. He then considered the land tendered as being alone ample security for this loan. But in addition, the Government was to hold the whole main line, branch lines, steel steamships, rolling stock, and the whole real estate of the company. He held that, moreover, the experience of the past two years, and the great increase in the carrying trade of the completed portions in 1883, over that of the preceding year, most satisfactorily solved the problem that the Northwest would supply a paying traffic to the line. Indications are strong that the Government will succeed in the passage of a bill based upon the resolutions including its features, which have received an affirmative vote in the House of Commons. Such bill is now before the House. It has been read twice, and at this writing, the date is fixed for the third reading.

A main difficulty with the opposition seems to be, that no way is clear whereby the Canadian Pacific can repay the obligations which, in case the Government programme is carried out, it will incur. As put by *The Monetary Times*, of Toronto, the assets of the road are unavailable. "And these assets," says our contemporary, "consist largely of wild lands, in a country where wild lands are to be had almost anywhere in a distance of a thousand miles. Of the twenty-five millions of acres of land granted to the company, 13,775,705 acres have been earned. The slow rate at which the lands have sold is seen in the fact that there are 21,246,600 acres still to sell. Of the three millions and three-quarter acres sold, a million and a half went to the North West Land Company; so that there have been sold to private parties only two millions and a quarter acres." Besides the loan proposed, of $22,500,000, to be made at five per cent. interest, there remains $7,380,912 required to complete the guarantee fund deposit, to be paid by November 7, 1888, inclusive, and charged four per cent. interest. The floating debt to be paid at once out of the proposed $22,500,000 is $7,500,000. Should the road be completed by the spring of 1886, running expenses must be met in addition to the obligations indicated; and the loan of $22,500,000 must be paid in 1891. The company has put into the main line, branches, and connections $37,377,155 more than it has received from the Government, which sum includes $8,710,240 paid on account of the guarantee fund, $4,028,604 on rails and other materials, and $3,482,257 towards acquiring a right to the seaboard. Deducting the total of these amounts, there is a balance of about twenty-one million dollars against the Canadian Pacific proper. Naturally enough, the financial propositions of the Government in behalf of the company are being strongly criticised; but as was said before, there seems to be the probability that the Government proposal of aid will be carried, notwithstanding the strength of the opposition, and the powerful attempt of the Grand Trunk Company to defeat these liberal proposals by urging unfairness, in that the affiliation of the Canadian Pacific with the Ontario and Quebec and Credit Valley roads brings the C. P. into competition with it. The substance of the Grand Trunk demand is described to be the surrender of the lines acquired by the Canadian Pacific in Ontario, to the Grand Trunk Company, in exchange, on terms, for the North Shore Railway between Montreal and Quebec.

In answer to this requirement, W. C. Van Horne, general manager of the Canadian Pacific, replies in a letter to Sir John Macdonald, that the Ontario and Quebec Railway has been leased and firmly bound to the Canadian Pacific for the term of 999 years, and his company will be unable to treat for its sale until the end of that time; but he is prepared, with the authority of its board of directors, to negotiate with the general manager of the Grand Trunk for the purchase of the North Shore Railway. He further gives an account of the acquirement by the Canadian Pacific of the Ontario and Quebec system, which includes the Credit Valley and the Toronto, Grey and Bruce railways, and of the control of the South Eastern Railway, "the only independent outlet from Montreal to the south and east." These acquisitions, he claims, are necessary to insure the commercial success of his road, and to enable every community in Eastern Canada to profit by its construction. Mr. Van Horne's letter concludes with the assertion "that the lines by means of which the Canadian Pacific Company will secure independence will not cost them one dollar, but on the contrary will add largely to their profits."

At a mass meeting of the electors of St. Laurent, the difficulties of the Jacques Cartier Union Railway have been discussed, and resolutions passed of which the most important read as follows:

That the Jacques Cartier Union Railway, which was begun in September last and finished and completed at a cost of over $150,000, and which was inaugurated on the 15th December last, is for the farmers of the North Shore, from Quebec to Montreal, a new channel of direct communication with the West and the United States at all seasons of the year, and that it is with great regret that the electors of Jacques Cartier county have seen the difficulties existing between the Canadian Pacific Railway Company and the North Shore Railway concerning the fusion of this new line with the North Shore Railway which has caused and is causing great damage to the trade and business of Jacques Cartier county.

That in case the Federal Government should not come to a decision for the settling and termination of the obstacles between the Canadian Pacific Railway Company, and the Jacques Cartier Union Company, then that the Federal Government do grant to the latter a subsidy of $12,000 per mile up to St. Vincent de Paul and $200,000 for the construction of a railway bridge over Riviere des Prairies in order to continue the Jacques Cartier Union Railway to St. Martin, to be there joined with the North Shore Railway.

Said resolutions and their cc.npanions have been duly forwarded to the minister of railways.

The promoters of the Souris and Rocky Mountain Railway report that they have received the best possible assurance from English capitalists that the necessary capital will be forthcoming to construct the line as soon as the charter difficulty is settled, and the Government announces the intention of aiding the enterprise to the extent of the original land grant. The road will start either from Melbourne, on the Canadian Pacific, or from Brandon, passing through Rapid City, west to Ellis, Sarkatoon, the capital of the temperance colony, thence to Battleford, the junction of Battle River and the North Saskatchewan, a total distance of 425 miles. It is proposed ultimately to continue the line to Edmonton.

According to the annual report of the Ontario commissioner of public works for 1883, the total mileage of the railways of the province, exclusive of the portion of the Canadian Pacific west of Lake Nipissing, amounts to 3,847 miles. Of this 1,464 miles were completed prior to confederation, and 2,383 subsequent to that date. Upwards of 703 miles are at present under construction or contract. The number of miles built during the year was 102.

### Apprentices in the Brooks Locomotive Works.

THE following circular was issued by the Brooks Locomotive Works, Dunkirk, New York, January 21, 1884.

"From and after Jan. 21, apprentices will be admitted to service in these works under the following rules, and no deviation will be made therefrom:

"An applicant must possess a good moral character; must be 18 years of age, with a fair knowledge of the ordinary English branches of education, and write a legible hand.

"Applications must be made to the office in writing, and must be written by the applicant.

"An applicant must possess a natural aptitude for mechanics, and have a settled personal desire and purpose to become a skillful and competent workman.

"The term of service for apprentices will be three years.

"The compensation for the term will be: First year, 7½ cents per hour; second year, 9 cents per hour; third year, 11¼ cents per hour. Ten hours constitute one day's work.

"Apprentices will be required to attend the night school such evenings in the week as may be designated for such purpose. Tuition and books are furnished free of charge, and from the date above mentioned attendance in the night school will be obligatory upon all apprentices who enter our service thereafter.

"Neglect of this privilege will be considered cause for immediate dismissal from our service.

"This company cannot guarantee continuance of service during the full term of apprenticeship, as the ability to do this must be regulated by the condition of their business, but they will do the best possible for their apprentices."

The following additional circular further expresses the company's intentions:

"It is the intention of this company to institute a high standard of excellence among their apprentices.

"*First*, by refusing all unfit applications, and

"*Second*, by using special endeavors to offer them every advantage to become not only skillful and competent workmen, but also to educate them in the principles underlying mechanical construction, and afford them opportunities to study and practice elementary mechanical drawing. Hence no applicant will be accepted until a full investigation of his character and elementary education is made.

"An applicant must be 18 years of age; must make application in his own handwriting through the mail addressed to our office, and must be prepared to furnish credentials of his character, education, and aptitude for mechanical pursuits.

"Applications proving satisfactory upon investigation will be placed on file in the order of their application, and accepted applicants will be advised when their services are required."

THE *National Car Builder* remarks that when forty-two inch wheels were first used in this country under passenger cars, there was a good deal of fruitless discussion about their utility as compared with that of smaller wheels. What discussion failed to make clear, however, has been determined by use and the knowledge thereby obtained. Much can now be said in favor of large wheels, showing their superiority to small ones for passenger service, that could not have been said with the same confidence a few years ago. English practice could, of course, be referred to as being conclusive, so far as the style of "carriages" on English roads was concerned. But our cars are altogether different in size, weight, and construction. Probably no road in this country has given forty-two inch wheels a more thorough trial than the Boston and Albany, and we are informed that with these wheels such a thing as hot journals is practically unknown on that road, none having been reported for a long time. This is attributed to the fact that the journals revolve slower, their surface speed with the forty-two inch wheels at forty miles an hour being no greater than that of journals with thirty-three inch wheels at thirty-one miles an hour. This is a moderate speed if the journals are well packed, and they ought therefore to run cool. It is also asserted that passengers perceive a difference in the riding of cars having the larger or smaller wheels, and that they prefer those with the large ones. This is significant if not conclusive. But there is still another thing that many observing people have noticed, and that is, that large-wheel trains appear to move at a comparatively moderate speed, when the distance covered shows a speed of forty and forty-five miles an hour.

## Our English Letter.

*Written Specially for the American Railroad Journal.*

FENCE WIRES AS TELEGRAPH WIRES—SHIP BUILDING ON THE CLYDE—TRAMWAYS IN GLASGOW—RAILWAYS IN INDIA—THE NEW TAY BRIDGE—THAT TO CROSS THE FRITH OF FORTH—ANOTHER BRITISH "HOWL" AT AMERICAN RAILROAD MANAGEMENT—CHEAP RIDES IN LONDON—STATISTICS OF METROPOLITAN RAILWAY.

I OBSERVE that one of our papers—I have forgotten which one—insists upon the practicability of using wires passing through the snow, as means of telegraphic communication. "In Norway," says the writer, "the winter lines are laid on the surface of the snow." This is encouraging to the expectation that the wire fences bordering railroads in many parts of the United States can be utilized in the manner indicated.

The output of new shipping on the Clyde in the year 1883 is an example of the astonishing rapidity which characterizes the development of ship-building in Great Britain. I observe that *Engineering* places the value of the vessels completed and begun during the year, in the forty shipyards which are the leading feature of the busy banks of said river, at ten million pounds; about six million pounds more than in 1874, which was an exceptionally busy year. As a loyal Briton, I of course rejoice in the astonishing magnitude of the figures quoted; and, observing, as I hope with some considerable degree of perception, the indications of industrial policy, as represented in the Congress of the United States, I see no reason to fear that "the Yankees" will by any calculable date, become rivals with the maternal nation in the production of ships for the leading carrying trade of the world. I refrain from committing myself to one word of comment upon that feature in your commercial polity by which my country people profit so enormously. Your statesmen, of course, understand better what the policy of the United States ought to be than a humble scribbler like me; but one can't help musing a little on the matter.

I see that Glasgow—I still keep to the banks of the Clyde—has 2,306 horses and mules in its tramway service, and 233 cars, besides omnibuses and breaks, "in that same," as Pat says. Cabbing is cheap, moreover, and street travel in the commercial center of Scotland is—well, I wish every great city were equally fortunate in this particular.

The East India Association has forwarded a memorial to the Secretary of State for India, urging the claims of Hindostan for railway extension and other internal improvements. As only 373 miles of new road were constructed in 1883 in the whole of that vast country, there appears to be good ground for the memorial. With adequate railway communication India would be saved much suffering in portions afflicted with drought, and the development, especially of the wheat and cotton-growing industries, would be wonderfully promoted.

Your correspondent takes note that every precaution is being made to prevent a repetition of the Tay Bridge disaster, perhaps the only railway accident recorded in which the loss was as complete, in life and property as that of a ship in mid ocean, the City of Boston, for example. The piers are subjected to a pressure varying from eight thousand to four thousand tons, and the bridge is being constructed able to sustain a wind pressure of fifty-six pounds to the square inch. It is expected that the new bridge will be completed by the spring of 1886.

Speaking of bridges, reminds me of certain figures just made public with regard to that one now under construction, to cross the Frith of Forth. This bridge will have two spans of 1,700 feet each and two side openings of 675 feet each. Each of the three cantilever trusses weighs fifteen thousand tons, and the open spaces between them will be closed by two straight girders, each 350 feet long.

Very hard things continue to be said of American railway management in the matter of the railways on your side of the Atlantic, which have been largely built with resources of money raised here. The financial condition of the New York, Ontario and Western prompts many of these exceedingly uncomplimentary expressions, due to the fact that ninety per cent. of the shares are held in Great Britain and Ireland.

You are aware that street travel in London is cheap. Perhaps you are not equally well aware that the cheapness of the accommodation pays handsomely those who provide it. Take tramways, for instance. In presiding at the last half-yearly meeting, when the report of these conveniences was adopted, the chairman stated that in September, 1878, which was the last year of the two-penny (four cent) charge for a ride, the number of passengers carried over the same length of tramways, was 10,298,000. In five years, with the fare at half that price, the number of passengers had considerably more than doubled, and fifty per cent. had been added to the receipts.

The two-cent fare on the Metropolitan Railway was taken advantage of by thirty million persons during the year 1883. At the recent half-yearly meeting of the company £171,182 was found to be available for dividend, five per cent. per annum on ordinary stock after providing for preference stocks. During 1883, 74,204,301 passengers were carried on the company's lines, making the gross receipts £603,768. The largest number carried on any day of the year was on Whit Monday, namely, 328,482, as Sir Edward Watkin remarked to his audience at the meeting referred to, "the largest number ever carried in one day either upon your railway or upon any other."

H. A. L.

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M. POISOT recently communicated to a French seientific society a note bearing upon the slipping of locomotive wheels. He tells that at the Mazenay mines, where smoke, condensed steam and general dampness combine to make the rails abnormally slippery, a remedy has been discovered by accident. A joint in one of the cylinder cocks of an engine sprang a slight leak, through which a jet of steam was impinged upon the rail. The engine driver immediately found that the wheels bit the rails so well that he was enabled to ascend a steep gradient without the usual slipping. By a slight modification in all the engines upon the works they have been made to discharge steam upon the rails when required, with the result that no more fuel is now expended upon hauling out one hundred tons of material than was formerly used for eighty tons.

A BRIDGE to cost a million and a quarter of dollars is to be built, crossing the Ohio river at Cincinnati.

THE Elmira, Cortland and Northern was incorporated March 10.

## RAILROAD MEDICAL SERVICE.

BY S. S. HERRICK, M.D.,
SECRETARY BOARD OF HEALTH, STATE OF LOUISIANA.

### GREAT BRITAIN AND IRELAND.

ON this subject I have been unable to obtain any information of consequence from the island of Great Britain. It may be presumed that mutual aid societies have been organized among the employés of the most important companies in Great Britain, and that the companies themselves are without any medical service on their own account.

Through the courtesy and aid of John Shew, Esq., United States vice-consul of Dublin, I have received a brief report from the secretary of the Dublin, Wicklow and Wexford Railway Company. This company has no medical staff in its own service, but "the employés have a friendly society, to which they contribute in proportion to their weekly wages. From this society they obtain pay while sick, and their burial expenses are paid when they die." The company has no hospital of its own, but subscribes to several civil hospitals, which are used by their employés.

Through the same United States official, fuller particulars have been received from the Great Southern and Western Railway Company, accompanied by a printed copy of the rules of a friendly society, organized among its employés in 1850. Any person may become an honorary member, without privilege of its benefits, on payment of £5, or by an annual subscription of ten shillings. The ordinary members consist of males in the employ of the company, at wages not exceeding fifty shillings a week, who at time of admission are in good health, of sound constitution, and not more than forty-five years old; provided they belong to no other benefit society nor enjoy a pension. A certificate of good health, signed by the society's medical officer and countersigned by his own superior officer, must accompany the application for admission to the society.

Any member convicted of crime or of fraudulent practices toward the society, forfeits membership and all contributions, unless it can be shown that he was insane. On quitting the service of the company in good standing, a member may claim half his contributions, less the amount granted for relief.

The affairs of the society are managed by a board consisting of three trustees, a treasurer, and a committee of not fewer than eight nor more than thirteen members. This last is composed of representatives of the traffic, locomotive, permanent way and police departments. The trustees are required to report annually to the registrar of friendly societies in Ireland, upon the funds of the society, according to act of Parliament; and every five years a report must be made to the same officer of the rate of sickness and mortality among the members.

The committee are charged with providing such medical attendance and medicines for the members as they judge proper. "Each medical officer shall, on being instructed, visit any members of this society and their families located within his district, at their respective residences, and provide them with medicine and medical attendance during their illness or disability, as their circumstances may require, and see and certify to the health and condition of candidates and others, upon receiving orders from the secretary to that effect; and such medical officer or officers shall not be allowed to receive any remuneration other than that allowed by the committee." Sick members are also visited at least once a week, or as often as the committee direct, by visiting officers appointed for this purpose.

Relief is granted to members in case of disability for work from sickness, but not in case of accident incurred while in discharge of duty to the railway company; from which it may be inferred that the latter is responsible to its employés for the results of accidents.

Dues to the society are deducted monthly from the pay of members by the railway company, and passed to the credit of the society.

The following is taken from the regulations of the above society:

TABLE SHOWING ENTRANCE FEES, MONTHLY SUBSCRIPTIONS, AND BENEFITS—

For—1st. Weekly Full Sick Allowance for First Six Months.
2d. Weekly Reduced Sick Allowance for Second Six Months.
3d. Payment at Death.

| Age of Member at time of Admission. | (CLASS I.) Wages from 22s. to 50s. inclusive. | | (CLASS II.) Wages from 16s. to 21s. inclusive. | | (CLASS III.) Wages up to 15s. inclusive. | |
|---|---|---|---|---|---|---|
| | Sick Allowance. | | Sick Allowance. | | Sick Allowance. | |
| | Full, £1 0 0 | | Full, £0 15 0 | | Full, £0 10 0 | |
| | Reduced, 0 15 0 | | Reduced, 0 10 0 | | Reduced, 0 7 6 | |
| | Payment at Death, 10 0 0 | | Payment at Death, 7 10 0 | | Payment at Death, 5 0 0 | |
| | Subscription | Monthly | Subscription | Monthly | Subscription | Monthly |
| | s. | d. | s. | d. | s. | d. |
| 20 | 2 | 6 | 1 | 9 | 1 | 3 |
| 21 | 2 | 7 | 1 | 10 | 1 | 3 |
| 22 | 2 | 7 | 1 | 10 | 1 | 3 |
| 23 | 2 | 8 | 1 | 10 | 1 | 3 |
| 24 | 2 | 9 | 1 | 11 | 1 | 4 |
| 25 | 2 | 9 | 1 | 11 | 1 | 4 |
| 26 | 2 | 10 | 2 | 0 | 1 | 4 |
| 27 | 2 | 11 | 2 | 0 | 1 | 4 |
| 28 | 3 | 0 | 2 | 0 | 1 | 6 |
| 29 | 3 | 1 | 2 | 1 | 1 | 6 |
| 30 | 3 | 1 | 2 | 2 | 1 | 7 |
| 31 | 3 | 3 | 2 | 4 | 1 | 8 |
| 32 | 3 | 5 | 2 | 4 | 1 | 8 |
| 33 | 3 | 5 | 2 | 5 | 1 | 8 |
| 34 | 3 | 6 | 2 | 5 | 1 | 9 |
| 35 | 3 | 7 | 2 | 6 | 1 | 9 |
| 36 | 3 | 7 | 2 | 7 | 1 | 9 |
| 37 | 3 | 9 | 2 | 7 | 1 | 10 |
| 38 | 3 | 11 | 2 | 9 | 1 | 11 |
| 39 | 4 | 0 | 2 | 10 | 2 | 0 |
| 40 | 4 | 1 | 2 | 11 | 2 | 1 |
| 41 | 4 | 3 | 3 | 0 | 2 | 2 |
| 42 | 4 | 5 | 3 | 1 | 2 | 2 |
| 43 | 4 | 7 | 3 | 3 | 2 | 3 |
| 44 | 4 | 8 | 3 | 3 | 2 | 4 |
| 45 | 4 | 11 | 3 | 5 | 2 | 5 |

Entrance Fee—1st Class, 2s.; 2d Class, 1s. 6d.; 3d Class, 1s.

Members who joined the society before the 1st of May, 1882, will be charged for rates shown for 28 years of age.

An amendment to the scale of sick allowance, adopted December, 1882, provides that the amount shall be three-fourths of the member's wages for the first six months of sickness in any year, and one-half thereafter; in no case to exceed £1 per week.

As will be observed, if sickness is prolonged beyond six months, the allowance thereafter is reduced; and if beyond a full year, with allowance paid up, the individual is dropped from membership.

No member is entitled to relief, whose illness grew out

of immoral or irregular conduct, nor while an inmate of any workhouse or lunatic asylum.

The sum assured after death is payable to the widow, children, executors or assigns of the deceased; but the committee may require the certificate of one of the society's medical officers, to show that there was no reason to attribute death to poison, violence, or criminal neglect; and in all cases the death must be attested by the registrar of deaths.

So far as I am able to learn, no railway company in the United Kingdom has instituted, in its own interest, a physical examination of employés; and it will be found hereafter that some of the railroad companies in distant colonies have not waited for an example there to protect themselves and their patrons from the consequences of defects of sight and hearing, and faults of vital organs in their employés.

As might be supposed, there is no provision for medical supervision of the personal hygiene of employés, and the sanitary condition of railway carriages, buildings, grounds, etc.

Regulations relative to transportation of live stock, to prevent over-crowding, deprivation of food and water, too long confinement, or admission of diseased animals to cars, are made and carried out by the Veterinary Department of the Privy Council.

(*To be continued.*)

## LITERARY NOTES.

"THE Creators of the Age of Steel," a new work by W. T. Jeans, is introduced by a very readable chapter, in which the period since 1850 is given as "the age of steel." Dr. Whewell is quoted as saying, in 1851, that gold and iron rule the world. Which is the mightier potentate of the two appears in a comparison made by the writer: "At the end of 1882 it was estimated that the probable yield of gold in the State of California, was $230,000,000. The Bessemer process has saved even more than that vast sum." Mr. Jeans urges, by both example and precept, the attention of young men to the various industries created by applied science and mechanical skill, which will have a greater future than can now be conceived. His biographical matter, forming the body of his book, is presented as encouragement and stimulus to the entering earnestly upon developing the industries of "the age of steel" by those who aim at a successful career. Five chapters with Sir Henry Bessemer as their subject; two, Sir William Siemens; and one each, Sir John Brown, Mr. S. G. Thomas, and Mr. G. J. Snelus, constitute matter which includes the interesting story of the inventions that have particularly distinguished the industrial history of the generation since 1850. Mr. Jeans has written a useful book with an easy pen. His work is not technical, but the ordinary reader acquainted with its contents, would be very well informed on the subject treated. A book like this cannot fail of its purpose, to interest and instruct, and incite by example. New York: Charles Scribner's Sons.

BOSTON is the birthplace of Vol. I, No. 1, of *The Beacon*, a large eight-paged illustrated weekly paper for persons of culture. It starts well, with two chapters of a new novel, "Farwell's Folly," by J. T. Trowbridge. A sermon by Phillips Brooks, a poem by H. Bernard Carpenter, a well-considered and well-written department headed "The Library," numerous bright editorial paragraphs, reviews of concert, theatrical and musical matters, a department "On Change," correspondence from New York, Philadelphia, Naples, Paris and England; and "The Dining Room," are the principal miscellaneous contents. *The Beacon* is handsome, pleasing, and very good, but we should have liked it better were it made up into thirty-two pages instead of eight. Possibly the low price (five cents) precludes the possibility of this arrangement. The best wishes of the AMERICAN RAILROAD JOURNAL attend *The Beacon*.

"RAILWAY TURN-OUTS," by Jacob M. Clark, is the latest of the valuable technical works published by D. Van Nostrand, No. 23 Murray street, New York. It is issued in its present form by permission of the publishing committee of the American Society of Civil Engineers. The book exhibits, in a systematic form, a method of practice intended, so far as it differs from others, to save time and abridge labor. No more needs to be said in its commendation than that it provides a system of laying out railway turn-outs instantly, by inspection from tables. The railroad engineer will see the advantage of such a work, which is produced in a form convenient for its being carried in the pocket as well as for desk use. It is, moreover, exceedingly well printed in type of convenient form and size, and strongly bound.

GEORGE H. ADAMS & SON, No. 59 Beekman street, New York, will publish, May 1, 1884, the first number of *American Progress*, a geographical, industrial, and descriptive monthly magazine. Their idea is to give the latest information concerning the United States, accompanied with a map perfect up to date, thus meeting a need felt by our leading business men. The first number will contain a new map of Colorado, with full description, history, mining interests, railroads, etc. Dr. Brockett, whose fame as a writer on geographical subjects is established, will edit the new journal, and the reputation of the publishers as makers of atlases, etc., during the past thirty years, affords the certainty that their part in the magazine will be efficiently filled. Their new map of Dakota, just received, is made from copper-plate engravings, upon a uniform scale of twenty miles to an inch. It embodies the latest information.

J. L. SMITH, No. 27 South Sixth street, Philadelphia, has just published Owen's map of Mexico, which is invaluable for use in railroad and telegraph offices. It is the most complete map of our neighbor country, giving all that the most exacting man of business and student need in such production. It measures about 6x4, is beautifully colored, and mounted on canvas with rollers. Accompanying the map is a table of altitudes from the "Memoria del Ministerio de Fomento."

F. C. TALBOT & COMPANY, Evansville, Indiana, are publishers of Forth's Official Railway and Business Guide for all the States and Territories governed by ninetieth meridian or central time. This useful work, complete, with maps, etc., is published monthly. Its multifarious contents are of interest and value to the traveling and general public, and its form and appearance are respectively convenient and pleasing.

A PERSON named Henry Greer is the editor of a pam-

phlet called "Recent Wonders in Electricity, Electric Lighting, Magnetism, Telegraphy, Telephony, etc., etc.," consisting, as it appears, of reprints from many sources, American and foreign. Its price is given at given at two dollars, including the advertisement of a "college" in which the compiler seems to be interested.

"WHAT shall we name it?" is a dictionary of baptismal names for children, containing two thousand names with their meaning and the countries from which they originated. We hope all our readers will need it for reference. New York: John C. Stockwell, 25 Ann street.

THE *Investors' Supplement of the Commercial and Financial Chronicle*, February, 1884, contains a vast amount of railroad information, with maps, and is, therefore, a valuable work of reference.

## Lubricating and Lubricants.

BY E. F. DIETERICHS, CLEVELAND, O.

IV.

APPLICATION OF LUBRICANTS.

THE use of poor lubricants and their injudicious application are the indirect causes of many accidents, stoppages, breakdowns, and expensive repairs. The injury is worked imperceptibly and slowly, but surely.

Proprietors and employés often look upon lubricating merely as a necessary evil, to be treated contemptously, as the expense caused thereby is looked upon as an unwelcome one. The same proprietors who would consider the use of the best coal for fuel and the best kind of boiler and engine for the production of steam and power, the wisest economy, frequently fail to observe that lubricants and lubricating are as important factors as either of them. They will persist in buying cheap and poor lubricants, and find it too troublesome to give occasionally their personal attention to the manner in which the lubricants are applied and how they should be applied. The mere pouring on of any kind of lubricant is not of economical or practical use, and the plea often made that "the hands pour the oils on any way" is absurd; it is an acknowledgment of bad management and want of proper control. The men cannot help pouring the oil on to keep the bearings cool, when it runs out below as fast as they pour it on above. That is what makes them use it recklessly. With oil capable of doing its work with regularity and efficiency they would not do so, as lubricating also means exertion, requires attention and causes labor which few care to exercise needlessly while attending to their regular duties. It is an error to expect one kind of oil, however good, to serve thoroughly and economically for all the manifold requirements in a factory, and it needs not much observation to understand the fallacy of such a course. Lubricating a cylinder and valves means lubricating in the presence of heat and moisture; and the lubricant to be effective must possess greater consistency than a lubricant applied to machinery at ordinary temperature. Moreover, lighter and rapidly moving machinery requires a more liquid, penetrating but nevertheless tenacious lubricant than is needed for machinery of heavier weight and slow motion.

Oils used for lubricating running machinery effectually cannot be expected to do efficient duty for screw or thread cutting or drilling also, as the requirements in each case are widely different. The heating of bolts, pipes or screws and their dies, emanating from frictional motion, is not so continuous as in the case of running machinery, where the lubricants have to absorb and rapidly dispose of the heat continuously evolved. In screw-cutting, etc., the metallic surfaces are of very different density, their contact with each other is short and a constant changing of metal takes place, affording ample time for the radiation of the frictional heat; and hence the glutinous animal oils with their superior heat-absorbing but slow heat-radiating power are more efficient for screw-cutting than the mineral oils.

From want of better knowledge of the characteristics of lubricants, much being dependent on their quality, many mishaps from entirely different causes are charged to them as inefficiency.

Applying lubricants to practical trial on machinery, requires judgment as to difference in their characteristics. Very good and tenacious lubricants are sometimes rejected as unsatisfactory or inferior on account of their inability to reach the place where the work is to be done, being expected to work through contrivances intended and fit only for the use of lubricants of lighter consistency; also such as change their characteristics under influence of temperature, or are perhaps required to find their way through feed-holes too small or bearings too light, and cups with adjustable feed or strands, without adjusting them to suit their consistency. Not unfrequently lubricants on trial, perfectly clear, are simply poured on to bearings full of gummy deposits from the impurities or decompositions of the lubricant previously used, and when the result appears unsatisfactory no thought is given to the fact that the lubricant on trial had to contend with and is made accountable for defects which are not its own. The same with cylinder lubricants; they are only too often condemned after a short and injudicious trial or stubborn attempt to feed through cups unfit for feeding other than more limpid lubricants, or such as lose their consistency when they become heated. They are accused of gumming and cutting when in reality they were contending with the impure deposits from lubricants previously used. Frequently when applying cylinder lubricants, entirely satisfactory when applied direct, complaint is made that the lubricant will not work through cups with so-called sight-feed, will cling to the sides of the glass and not pass automatically in drops through the columns of water; yet this very clinging quality proves that the lubricant can take the same tenacious hold on the sides in the cylinder and on the piston without being blown out by the steam before having performed its duty there.

When a change is made from the use of one kind of lubricant to that of another, especially if the latter is better and freer from gummy matter, it stands to reason that accumulated deposits left by the former, suddenly and partially softened by and becoming incorporated with a small quantity of the latter, may work injury if not speedily relieved by liberal additions, until all such deposits are removed and the new lubricant has been enabled to form its own bearings. For such result the better lubricant is often blamed and rejected before it has had time enough to show its merits.

A lubricant to be powerful must possess fluidity and tenacious consistency and retain the same nearly uniform

at all temperatures. The applying of such a lubricant to heavy bearings is the most efficient and economical lubricating. To do it efficiently, the feed hole in the caps of the bearings must be boxed large enough and proportionate to the consistency of the lubricant, to enable it to diffuse itself uniformly all over the bearing, and on very long bearings it would be more practical still to have two such holes at equal distance from each end. Such lubricant will cling to the metal and remain there when lubricants subject to changes of temperature would run through as fast as poured on.

We are deceiving ourselves when we believe that we are practicing great economy when we apply grease in place of oil for lubricating our machinery. We soon find out that we have to depend on the expenditure of a larger amount of power and its equivalent in heat to keep the grease melting; and if not properly applied and looked after unlooked for injury to the bearings may be the result. The running with so much accumulated frictional heat is a drag on the motion which sooner or later we find to be equivalent to the increased expenditure for the production of power, and the wear on the machinery producing the motion. It is of course better, especially on heavy bearings, to use grease of good quality properly applied than to use oil of poor quality, yet in using grease we have to consider, all other points set aside, the difference in temperature which the grease requires for its melting point, to set it at equal basis with oil, liquid at ordinary temperatures. This amount of heat, and so much more as is required to reach its high vaporizing temperature, the grease has to carry, and is therefore unable to relieve the bearings of more than a limited amount of frictional heat created there.

Careful and ingenious experiments, made by intelligent and experienced investigators, have shown that the temperature on the frictional surface run with grease was some thirty-eight degrees greater than the temperature of the atmosphere of the room, while using oil as lubricant the increase of temperature was only eight degrees, and the amount of friction with grease was found to be some thirty per cent. greater than with oil. Increase of friction is equivalent to increased expenditure for the production of power, and increase on the wear of the machinery.

Applying grease through feeding-holes, or the principle that the frictional heat increasing on the metal shall melt the grease and cause it to flow through the hole is wrong, when we consider that we lubricate to prevent a rising of temperature on the bearings; and we should therefore not depend on each rising to enable us to lubricate. When lubricating with grease we should apply it as broadly as possible, through slots cut in the cap of the bearings and resting direct on the moving shaft. The practice with engineers of keeping their lubricants on the steam-chest or boiler is wrong, as the lubricant applied in this highly heated state is unable to absorb more than a very limited amount of frictional heat.

The colder, the more directly and regularly a lubricant is applied to the place to be lnbricated, the more efficiently and economically will this be done.

*(To be continued.)*

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A NEW volume will begin with the April number.

## Some Causes of Unsatisfactory Results in Painting Cars.

BY A. J. BISHOP.

IN opening this subject I wish to invite a free and open discussion on any of the points taken. The first thing that a railroad usually does is to build brick or stone machine and car shops then put up an old shed for a paint shop. Now, the material that is used in the machine and car shops is largely wood and iron, and the expansion and contraction is so little that really these materials could be used in almost any atmosphere. But when it comes to the painter, he is given a shop generally devoid of the three greatest requirements necessary to a perfect paint shop, which is light, heat and ventilation. The materials the painter has to deal with are very sensitive and are subject to atmospheric and other changes. Paint will not dry properly in a dark shop, and will dry unevenly in a damp shop. In cases where the tracks run lengthwise in the shop, and there are windows on the sides and not skylight enough to give the same light between the cars, cracking will most surely occur on the dark side if the car is brought up in the same time, as the paint on the dark side will not be thoroughly dry. So I consider light one of the greatest essentials of a good paint shop. Heat is also a great factor in the drying of paint, and I consider steam-heating the safest method, with the coils of pipe running around the sides of the shop, as then a uniform temperature can be maintained. Where stoves are used you can never secure a uniform heat, and they frequently generate gas which will produce many devil-tries both in paint and varnish. This, of course, occurs more frequently in a poorly ventilated shop. Hence good ventilation is also very important, and without it no perfect job can be produced, as it is not practical to ventilate by the windows. There is only one way, and that is to obtain ventilation through the roof. There should also be ventilation under the floors of the paint shop. Where the floors are solid there is a great amount of dampness, which is very injurious to paint and varnish. I can't help but feel that the want of proper light, heat and ventilation are the prime causes of much of the trouble experienced in the paint shop, and this conviction forces itself on me more strongly on account of what is demanded from the paint shop at the present time. I refer to the material shortening of the time now given to paint a car. While many parties still use boiled oil in car painting, I cannot but think it is a great mistake, and believe it is the cause many times of the paint cracking and blistering. I deem boiled oil the correct thing for outside oil painting, but where a color is to be protected by varnish I think raw oil soould be used, and very little of that, and if you desire to hasten its drying, use a good coach Japan. Referring to the causes of cracking, the simplest illustration is the mud-hole. The cracks in a mud-hole are caused by the portion underneath drying slower than the outside, hence the rule that the undercoats in painting should be made to dry quicker than the outer coats, and whenever this rule is violated cracking will surely occur. This applies to varnish as well as to color coats.—*Oil, Paint and Drug Reporter.*

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AN exhaustive abstract of the report of the Pennsylvania Railroad Company, will appear in the next issue.

## Master Mechanics' Association Circulars.

THE following are circulars of inquiry recently issued by committees of the Master Mechanics' Association through the secretary's office:

LUBRICATING VALVES AND CYLINDERS.

Your Committee on the Best Material for Lubricating Valves and Cylinders respectfully ask for information in reply to the following questions:

1. What kind of lubricant do you use on valves and cylinders?
2. Have you made any experiments with other kinds of lubricants? If so, please state results obtained.
3. How is the lubricant applied, by self feeders, cup or steam chest, or through pipes from cab? Please describe the device you are using. If self-feeding cups, where is best location?
4. Have you made any experiments with self-oilers? If so, please describe the different devices and give results of experiments.
5. What mileage are you getting with the lubricant you are using, to the pint or pound?
6. What results have you obtained in the wear of valves, piston, packing and glands with the lubricant you are now using compared with others you have tried?
7. What in your opinion is the best method of applying the lubricant to cylinders?
8. If you are using a compound that is made of several lubricants please give proportions.

In answer to above questions please do not confine yourself to the questions, but give any facts or exact data you may have bearing on the subject.

Please send replies not later than April 1 to H. Schlacks, Superintendent of Machinery, Illinois Central Railroad, Chicago, Ill.

H. SCHLACKS,
J. M. BOON,
H. MIDDLETON, } Committee.

LOCOMOTIVE AND TENDER TRUCK WHEELS.

1. How many locomotive and tender trucks have you equipped with Allen paper steel-tired wheels?
2. How many with Paige plate steel-tired wheels?
3. How many with other makes steel-tired wheels?
4. How many with chilled cast-iron spoke or plate wheels?
5. State if any trouble with tires coming loose or breaking, and to what extent in proportion to whole number in use.
6. What kind of wheel do you consider safest for engine and tender trucks?

Will you please give in table furnished below the relative cost of cast-iron wheels and steel-tired wheels?

| CAST-IRON WHEEL. | STEEL-TIRED WHEEL. |
|---|---|
| 1 First cost | 1 First cost |
| 2 Cost of application | 2 Cost of application |
| 3 Cost of removal, for defect or worn out | 3 Cost of turning tires, including removal and application |
| 4 Amount of damage, by defect or breakage | 4 Cost of removal for defect or breaking |
| 5 Loss of service of engine being held for application of wheels | 5 Amount of damage, by defect or breaking |
| Total cost | 6 Loss of service of engine being held for application of wheels |
| Credit, value of scrap | Total cost |
| Net cost | Credit, value of scrap |
| Miles run | Net cost |
| Cost per mile | Miles run |
| | Cost per mile |

Respectfully submitted,

CHAS. H. COREY,
R. C. BLACKALL,
J. B. ROSS. } Committee.

A MAN in a sleeping car, went through a terrible accident, in which the sleeping car rolled down an embankment, without waking. It was noticed, however, that as the car struck the bottom he murmured: "Don't, Jane; I'll get up and start the fire."

# Communications.

## A Civil Engineer's Grievance.

*Editor American Railroad Journal:*

I SUPPOSE that although the age of chivalry is past and gone, the spirit which induced it still lives, and will, so long as there are wrongs which should be righted. We are not permitted to see men with iron clothing on their bodies, and iron pots on their heads, and sheet iron boots on their feet, sitting astride of horses protected with garments of the same material, going about to see that the strong do not take advantage of the weak; but we have the editor with his pen, and the press room with its thundering engine, to put before the eye of the public all that is mean and contemptible, and to hold it up to derision and obloquy. And these, unlike the celebrated Don Quixote, have not outlived the time when their kind of chivalry may serve society. Had that worthy lived later than he did, his chivalric spirit might have found some other field of usefulness, and he might have become the compeer of Watt, Stevenson or Brunel in the constructive arts, to confer blessings upon his race. Still later he would have found himself surrounded by his instruments and his scientific books, a useless wreck of a man for whom the world has no further use, as his services are no longer required, owing to the "improved methods." Now, unfortunately, a fair and just classification places the writer among the deluded individuals who are inspired by the desire to confer a blessing upon humanity, in smoothing their paths, and relieving their suffering beasts of burden—with those whose praiseworthy but enthusiastic efforts have resulted in personal discomfiture almost as disastrous as that which befel the Don when he mistook the giant arms of the wind-mill for those of some monster intent upon wide-spread destruction. He felt that he was well prepared for the conflict. His armor was well fitted, and his lance well poised. By nature and education he was acknowledged to be preëminently qualified for the task he had imposed upon himself, but after a few successful conflicts he was left to discover that there was nothing more to conquer, and that his heroic habiliments and polished spear were likely to rust and crumble away, for the very want of an object upon which to burnish them.

In order to illustrate the writer's meaning, he will relate a story. A gentleman with whom he happened to have some acquaintance, requested him as a personal favor, to visit a town in which he had a personal interest in a place not far from New York. There had been a disastrous flood in the region, which had destroyed much public and private property, and some lives had been lost. He visited the scene of these disasters with some of the county "superwizors" as he believes they call themselves, and he suggested that it was very bad to have people drowned and bridges cleaned out, and muddy water running around houses and into them, destroying carpets and furniture, and scaring women and children in that way; and that an engineer who had authority to make a thorough survey of the stream and regulate the flow of the water, and to determine the plans of the future bridges, could do a good work. He was informed in reply that they, the

officials in his company, having been elected by the people, were competent to do all of that and much more, and that when they reached their decision they would be pleased to hear from him, and would entertain a proposition to reërect the required work. Understanding well from previous experience what this meant, and believing that as there had been no panic in the market to affect the price of county commissioners or other officials in a way likely to be to his advantage, he decided to tarry in that town only a very short time, and to content himself with what he had learned by viewing the ruin which bull-headed stupidity and ignorance of the plainest of physical laws had wrought. As he was sped away in the railway train, he lighted his pipe in the smoking car and reflected thus: What is likely to be the logical sequence of this state of things? Next spring those official engineers will advertise for bids to rebuild those bridges, accompanied by plans and specifications, and the iron bridge men will pour into that town until they will be thicker than hair in hotel hash, and each of them will "see" as many of the official engineers as he can. The landlords will do a thriving business, and one fellow will go home with the pleasant assurance that his generous libations and liberality, and his superior knowledge of how to discover the weak points of poor human nature, have distanced those of his rivals. And the bridges will be built again, and the moral rectitude of the officials, if they had had any, will be swept away at the letting, and the bridges will be swept away by the next flood. In the meantime the engineer will have starved to death, or will have sought some other means of procuring a living; and then the people will be tired of being taxed and drowned, and they will say that, as we cannot have bridges which will stay where they are put, we will get along without bridges. They will content themselves with reflecting that they will be able to ford the stream in dry weather, and in wet weather stay at home. In time, they will muse, we must lapse back into a condition of semi-civilization and finally into barbarism.

Another case occurs to the writer. In the town where he lives and pays taxes, there is, or was, a stone bridge or culvert. This stream crossing has been torn out several times, and the ruins of the last are still there. It is enough to make one laugh to see in how absurd a manner the masonry was put in, were it not that one has to bear his part in paying for it. Do you suppose for a moment that the writer or any other engineer having any anxiety about his future or fear of eternal punishment, could get the slightest hope of a chance to design a bridge for that place? The arms of that wind-mill would send him so high, did he make the attempt, that he would enter at once into the kingdom come, and Hades would lose forever all hold on him.

What, then, are engineers to do? This one has decided that he will not, of necessity, be driven into contracting, as he is quite satisfied with small gains, and has more constructive than financiering talent. He will not undertake to overshadow the weak virtue of those who have secured their election to positions which should be those of honor and trust, neither will he become a scientific prostitute. Must they, like Diogenes, live and die in disagreeable impecuniosity, or should they show fight and "sock it to them," (the dishonest politicians) as Socrates, that grand old Greek philosopher did to the aldermen *et al.* of his day? If modern civilization cannot and will not afford him that work which he has fitted himself to perform, he will accept the situation; but in doing so it is unreasonable to suppose that, as the owner of his own home, he will submit to that taxation which perpetuates a pernicious system of building public works. He must not be regarded as the vassal, the slave, of the vile distillment of ward politics. He would rather retire to the primitive forests, and seek the society of wild animals, and struggle with Nature direct for his subsistence.

If the people can do without us engineers we must do without the people; become tramps or hermits; take our instruments and books into huts or caves with us, and like the Don read in musty volumes of the days that are past and gone; pore over wrongs that should be righted, and regret that the light of the lamp of science, shine it ever so brightly, can never penetrate the thick-skulled pate of the pot-house politician.

If you can furnish a solution of what seems to be a difficult problem, the writer doubts not that you will receive the heartfelt thanks of many others than he.

PONTIFEX.

NEW YORK, February 11, 1884.

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### Road-Bed Track and its Fixtures.

*Editor American Railroad Journal:*

THE earnest discussions now going on in several periodicals, on train dispatching and signal devices and systems, seems to me, in these days of frequent accidents from bad masonry, weakly constructed bridges, broken rails and spreading of track (all of which causes can be remedied), like a man building a house without any, or at least with but a poor foundation; and the question might justly be asked, of what avail is the dispatcher's order for train so and so, to run so and so, and wait further orders, if the track is not in a condition for these orders to be fulfilled?

A railroad with sure foundation and good quality of stone on culverts and abutments, with substantial material and good workmanship in bridges and trestles, cuts and fills wide and properly sloped, ditches regularly cleaned out, ties evenly spaced, rails laid true to engineer's stakes on tangent and curve, and track kept free from low joints and loose bolts, would be a good railroad, and the train dispatcher's best assistant, and would, so far as the track is concerned, materially assist in his orders being fulfilled.

Have we got good material and properly distributed in our bridges, good foundations for our masonry, or appliances and connections to prevent low joints, loose bolts or broken rails? Accidents, almost daily recorded, say we have not.

Road bed, track, and its fixtures, would certainly be an interesting subject to comment upon and very profitable to many an aspiring engineer, and perhaps some of our practical engineers and roadmasters, who read these lines, would give through your columns their conclusions, drawn from years of experience and observation, and present suggestions which would tend to remove some, if not all, of the miserable evils which now exist in track and its fixtures.

A BEGINNER.

TROY, New York, February 14, 1884.

# Tramways.

**American Street Railway Association.**

*President.*—William H. Hazzard, Brooklyn, N. Y.
*First Vice-President.*—James K. Lake, Chicago, Ill.
*Second Vice-President.*—George B. Kerper, Cincinnati, O.
*Third Vice-President.*—D. F. Longstreet, Providence, R. I.
*Secretary and Treasurer.*—William J. Richardson, Brooklyn, N. Y.
Office of the Association, cor. Atlantic and Third Avenues, Brooklyn, N.Y.

## PROPOSED RAPID TRANSIT ARRANGEMENTS IN NEW YORK.

ON the ninth of February the Rapid Transit Commissioners, New York, completed the first part of their work, namely the "location" of routes. Their first meeting was held in the mayor's office, December 12, 1883, and their labors began on the following day, when a meeting was held at which addresses were delivered by prominent citizens and by William P. Shinn, president of the National Cable Railway Company. The next day another meeting was held at which resolutions were offered declaring that there existed a necessity in the city for additional steam railways for transportation of passengers, mails, or freight. These were passed ten days later. Numerous meetings were held during the intervening period and after, in which many men of local reputation took part, and suggestions almost innumerable on the subject of the proposed improvements, were received from property owners in the city. On the ninth of January the commissioners started on a trip to Chicago, where they inspected the operations of the cable system run by the National Cable Railway Company. After their return, five days subsequently, meetings with the Commissioners were resumed, and their time otherwise occupied with the examination of various competing systems of transit, until, on the ninth ult., the first stage of their laborious undertakings was ended in their proposal of twenty-nine new routes of rapid travel. As described by one of the Commission, their scheme involves three roads running lengthwise of the city and the balance cross roads.

To decide upon the kind of superstructure and the mechanical construction of the means of rapid transit, was the second of their duties undertaken by the Commission. On February 15, they passed a resolution declaring that at present they considered the cable system of construction upon the new routes the most desirable, whether wholly or in part upon the surface. Ten days afterwards the Commissioners decided that the company to be formed for the purpose of constructing, maintaining, and operating the lines of surface and elevated railways should be named "The New York Cable Railway Company," and fixed the fare of one person for a continuous trip between two points on any two connecting or intersecting routes at five cents between four in the morning and midnight, and six cents the remaining four hours of the twenty-four. At the present writing they are seeking from the State legislature, an extension of the time originally given them for their work. The outlook is obstructive litigation on the part of corporations interested in present franchises, the interests of which would be possibly temporarily injured were the plans of the Commission executed, and from individual owners of property; and a hard fight at Albany over the proposal to remove by legislation what stands in the way of the Commissioners' scheme being carried out.

There is unquestionably very much room for improvement in the matter of street travel in New York city. Already an outcry is heard that the National Cable Railway Company has been unduly favored by the Commissioners, seeing that it claims to own all the patents which have been successfully applied to street railways, and to have the exclusive right to their use east of the Rocky Mountains; and that, therefore, the New York Cable Railway Company will be virtually the National under a new name. The Commissioners, as it appears to us, are not fairly dealt with when this is urged against them; the presumption, on the contrary, is that their work so far, has been done consistently with the obligation laid upon them to do their duty as honorable citizens representing, not a company, but the entire population of the greatest city on this continent. Surely public virtue ought to be presumed of public servants, and that citizen does not deserve well of his country who finds a grievance in the fact that those who provide a great public convenience largely profit by it. To this cause all public improvements on a great scale must be referred. In the present instance, the corporation taking franchises from the Commissioners, incurs the obligation to pay their salaries and expenses, and to accept the probable difficulties in the way of litigation and testing the constitutionality of such legislative enactments as at present obstruct the work to be undertaken. While the interests of certain horse-car companies seem to be threatened by the proposed improvement in rapid transit, we cannot but believe that the expansion of means augmenting the desirableness of New York as a place of residence, will, in the long run, promote the gain of all who are engaged in the transport of its freight, mails, and teeming population.

THE present session of the New York legislature will be memorable for the exacting proportion of time and labor given to affairs of this city. What with schemes of rapid transit, the question of what should be the measure of the mayor's powers and responsibilities, etc., etc., the rural legislator must find New York and its affairs a splendid burden.

### Tramways in Massachusetts.

IN their Fifteenth Annual Report, the railroad commissioners of Massachusetts give returns from twenty tramway companies. During the year from September 30, 1882, to corresponding date 1883, one was dropped from the list—the Union. The aggregate capital stock is $7,524,700.00, being an increase of $523,120.00; the gross debt has also increased $19,494.71, and now amounts to $4,431,666.94. The aggregate of stock and gross debt is now $11,956,366.94.

One corporation made a dividend of twenty-two per cent., one of ten, two of nine, six of eight, one of seven, eight of six, one of three; while nine declared no dividends.

The average rate of dividend on the total amount of capital stock was 5.8 per cent.; and the net earnings (interest deducted) amount to 4.6 per cent. on the aggregate of capital stock and gross debt.

The whole length of track, including branches, sidings, and double track, amounts to 305,746 miles; being an increase of 8,281 miles. The average cost was $20,499.35 per mile for permanent way, $9,922.10 for equipment, and $10,655.32 for land and buildings; making a total cost of $41,076.77 for each mile of road owned. The number of round trips was 2,291,990, an increase of 64,047 over the previous year; with a mileage of 15,337,504, an increase of 655,977. Passengers were carried to the number of 88,229,796, being an increase of 4,306,219 over the number carried during the preceding year. The number of passengers carried on the street railways exceeded the number on the steam roads by 26,699,049.

The gross income was $4,583,042.53, an increase of $88,084.88. There was an increase of net income of $143,911.11; and a decrease of dividends paid amounting to $17,367.00.

The average amount received for the conveyance of each passenger was 5.20 cents, and the average cost of carrying each person amounted to 4.33; the net profit to the companies being 0.87 cent, against 0.63 cent, as compared with last year. The average cost of a round trip was $1.67, with a profit of 33 cents, being an increase of 9 cents over last year.

The whole number of horses was 8,418, being an increase of 482; the number of cars was 1,762, showing an increase of 110, and the number of other vehicles was 134. The number of persons employed on street railways was 3,541, being an increase of forty over last year. The number of accidents reported was fifty-five, of which five were fatal. The number injured the previous year was forty-nine; six of whom were killed.

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THE time is opportune to remind the public that one plan of rapid transit for New York proposes an underground line in Broadway on the arcade plan. It provides separate tracks for through travel, on which trains will be run at the rate of thirty miles an hour, with stopping places at proper intervals, and other tracks for way trains, with more frequent stops. The plan involves, moreover, underground sidewalks and facilities for placing pipes, wires, etc., where they will be accessible without disturbing the street surface. It is being discussed by the legislature in Albany, where it finds influential favor, and the chances of its adoption seem good.

### Cable Roads in Philadelphia.

THE *Record* says that the contracts for constructing cable roads to be made for some time by the Philadelphia Traction Company have been entered into, and the work will be proceeded with immediately. The lines are to be completed by the first day of July by the contractors, under a penalty of $250 per day for each day after that date that the companies are debarred from using them.

The building on Market street will be seventy-nine feet in front and 176 feet in depth, and three stories in height. The first floor will be devoted to machinery, and the second and third to the storage of cars. At each of the stations there will be two Corliss engines of 250 horse power each, that can be run up to 300 if necessary. Next season the cable road will be extended on Seventh and Ninth streets to the southern terminus of the line, on Sansom and Filbert streets, and on Lancaster avenue as far west as the Park.

There are now in course of construction at the shops of the Market street company, in West Philadelphia, a number of new cars especially designed for the cable roads. They are designed to run in couples, and will weigh about two and one-half tons each. The front end of the clutch car and the rear end of the connecting car will be closed. Passengers will enter by the back platform of the first car, and then pass into either one of the coaches they desire. The platforms will be inclosed and there will be guards about the wheels. Stops will only be made at the main street crossings to take on or leave off passengers. The same grip as is now used will still be continued, but it will be attached and detached by a mechanical device that will obviate the raising of the trap-door in the floor of the car, as is the case on the experimental Park line.

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### English Improvements in Mechanism for Tramway Service.

THE claims for a system of propelling tramway and road cars are (1) the mode of hauling or propelling street cars by means of a constantly traveling endless rope running in a tube (or tubes), and which rope is kept in position at intervals by sheaves below and above each tube, having a longitudinal slit on its upper surface, which is made on one or both sides of it and having suitable openings at convenient distances to enable the sheaves or gripper to be withdrawn, and (2) the mode of working the gripper upon a separate vehicle or dummy. In a newly-patented construction of wheels for railways and tramways, projections on the inner face of the tire retaining rings in combination with recesses in the wheel tires are arranged to prevent the bodies of the wheels moving in a rotary direction within their tires. In electric tramways and vehicles to be used thereon, the electric conductors are placed in a trench below the ground; the trench is is provided with a cover having a small longitudinal slit to admit of the free passage of the parts carrying the sliding contact pieces; the conductors consist of sheets of copper or other conductors forming a lining within a groove in a longitudinal sleeper formed of four pieces; the sliding contact pieces are in the form of cylinders made of sheet brass, the edges of which are not soldered. Tramrails are constructed in two parts, one part consisting of the head, vertical rib and base flange, and the other

consisting of a channel rail supporting and partly inclosing the first-mentioned part, are designed to be bound to underlying and laterally adjacent portions of the road pitching; correct relation between these portions of the road surface being thereby maintained whilst the rails themselves are capable of being removed without disturbing the surrounding roadway; this relates also to the construction of fastenings for securing the rails. An improvement in the construction of tramways and apparatus for facilitating the hauling of vehicles thereon by means of cables or ropes, relates to the construction of a device or apparatus usually termed the "grip," whereby the car may be connected to or disconnected from the moving wire rope in the underground tube; to the mounting of the grip which is placed upon a frame carried by and between the axles of the car, and is operated by suitable mechanism from either end of the car; to means for automatically disengaging the car from the rope at certain points on the line, as for instance where two ropes cross; to means for guiding the rope around a curve, and to the tube in which the rope travels.

## TRAMWAY NOTES.

A SOLUTION of the difficult problem of rapid street travel may be assisted by the discovery of a new motor known as "The Triple Thermic Motor." The new motive power is the vapor of bisulphide of carbon. It has been in practical use in driving a sixty-eight horse power engine for more than six months past in a cement paving manufactory on West Forty-sixth street, New York. The discoverer of the means of applying the new power and the machinery adapted to its use is W. S. Colwell, formerly of Pittsburgh, who, it is stated, has been at work many years on their application. The material from which the vapor is generated, bisulphide of carbon, is a discovery of the last century. The force and power of the vapor in its application are said to far surpass that of steam, and its application and regulation are stated to be under a more perfectly safe control than those of steam. The invention or discovery consists in evolving bi-sulphide of carbon into a vapor for operating machinery, by generating heat in a generator and transferring it into a vessel containing bisulphide of carbon. The latent heat of the steam is utilized to convert the bisulphide of carbon into vapor, only 118° being necessary to produce this vapor. A prominent engineer of Chicago, in giving the result of his examination of the new motor, says: "I saw a fifteen-horse power boiler, with very little fire under it, generating steam, which generated the new motor, which in turn ran an engine of sixty-horse power." A syndicate has been formed which controls the invention and all its patents, with a capital stock of $25,000,000, of which $8,000,000 has already been realized on stock. Ex-Governor Hubbard, of Texas, and Ex-Collector Beard, of Boston, are mentioned as being largely interested in the new motor syndicate. When Marius Sellers, an engineer of Chicago, was asked: "Do you think that the vapor of bisulphide of carbon will supplant steam in the near future?" he replied: "When I tell you that the intelligent engineering experts have been deploring the loss of ninety-nine per cent. of the latent heat of steam in the ordinary boiler, and when I say that all the heat practically is saved by the use of the new motor, you may judge for yourself as to what I think about it. It seems to me that these fellows have solved the problem at last." W. S. Colwell, the inventor, is one of a family of nine sons, six of whom are preachers, and there is not a poor one in the lot. The president of the present association, or union, is the Rev. Dr. T. M. Colwell, a brother of the inventor, pastor of the largest Baptist Church in Lowell, Massachusetts, and a man who stands high among Baptists throughout the country.

A NEW plan of rapid transit in Brooklyn, is projected. The company having the project in hand is to be known as the Brooklyn and Long Island Cable Railway Company. The incorporators are Austin Corbin, William Richardson, J. Rogers Maxwell, Newberry H. Frost, Frederick A. Schroeder, Henry W. Maxwell, Charles Storrs, William B. Kendall and Samuel W. Bowne, of Brooklyn, and Henry Graves, of Orange, New Jersey. The capital stock of the company is $1,000,000, with the privilege of increasing the same to $5,000,000. The new company is the result of a combination between the Long Island Railroad and the Atlantic Avenue Railroad men. The proposed routes of the company will be a scheme of rapid transit, meeting the needs of the city in an even and approximately perfect manner. Work on the new road will be begun just as soon as the consent of the mayor and common council can be obtained. William Richardson, president ot the Atlantic Avenue Railroad Company, says that it will not be necessary for the company to have a commission appointed as under the act of 1875, because it intends to proceed under the cable act of 1866. If the mayor and aldermen grant consent, and no unforeseen legal difficulties obstruct the progress, the company expects to have the entire road completed within a year. It is claimed that by means of the stationary engine and cable system a speed of thirty miles an hour, if necessary, can be attained on the proposed elevated road.

THE amount of capital authorized for the construction of tramways in Great Britain and Ireland to the end of June, 1883, was £14,617,842, the amount paid up £9,929,789, and the total capital expended £9,750,827. The length of line open for public traffic 671 miles; the number of horses belonging to the companies, 20,122; locomotive engines, 117; cars, 2,819; and the total number of passengers carried, 295,721,171. The gross receipts were £2,211,973; the working expenses, £1,752,360; and the net receipts, £459,613. These figures represent the gross amounts for the seven years ended June 30, 1883, and relate to 141 companies, of which twenty-eight, with a mileage open of 170, belong to local authorities, and 113, with a mileage open of 501, belong to other bodies or companies.

REGARDING the city of Buenos Ayres tramways, an English exchange says: "The two last traffic returns record the largest 'takes' the company have ever had, and the traffic for the year 1883 exhibits a great increase over the 'exhibition' year of 1882. That increase approaches £15,000 over 1882's traffic, although in 1882 there was an increase of about £18,000 over 1881's yield, due in a measure to the exhibition which was then held. The material increase in the traffic is, however, due to the greater facilities and accommodation given in the car service, and therefore is accompanied with higher expense. The additional traffic has yielded additional profit, if not exactly

in the old proportion, and the outcome of the year's operations will doubtless be more than usually gratifying. The property is remarkably good."

A RAILWAY track has been built around the Brush Electric Light Works, in Cleveland, Ohio. On this track Charles T. Brush, the electrician, and his assistant, will test a new electric motor applied to street cars. An old Woodland street car has been repaired, and the motor and electrical machinery placed on the front end. The electricity will be in the car, and not in the rails, as in the Edison system. By this method the conductor of the car can operate the motor, and stop or propel the car at will. The new invention, if successful, will probably be put in use on the street car lines of Cleveland.

A ROW of straps attached to the bell cord hangs along the sides of the street cars on a west side line. Yesterday afternoon a fat woman, desiring to have the car stop, threw her weight on one of the straps. A tall man standing on the rear platform with his back to the car, clapped his hand to his ear and ejaculated, "Holy Moses!" The conductor grinned and rang the bell. "What was that?" asked the tall man, as the woman splashed through the mud to the sidewalk. "The straps," explained the conductor, "are so adjusted that they cannot ring the bell. Instead they operate a whistle which is just where your ear was. I'm supposed to hear the whistle and ring the bell. The whistle is pretty weak, though, and I don't always hear it."—*New York Times.*

THE first cab of the New York Cab Company was put on the street, February 24, and about the middle of March, between twenty and thirty more will be in operation. The rate charged per mile or fraction thereof is twenty-five cents. If a cab is kept waiting fifteen minutes by any person he will be charged for a mile. Cabs will not be sent to a house upon order without charging for the distance covered in going. They will be licensed and placed on the public stands to compete for patronage. Only fixed rates can be charged.

AT the late meeting of the American Society of Civil Engineers, held in this city, its committee on standard time expressed the opinion that the next step in time reform was to abandon the division of the day into halves of twelve hours each and to adopt a single series of hours numbered from one to twenty-four. The practical difficulty was the necessity of adapting existing watches and clocks to the proposed change. This, however, could be done at an insignificant cost.

IN the new method of warming tramway cars used on the DeKalb avenue line in Brooklyn, two pipes run under the seats on each side, charged with a composition of acetate of soda, which at each trip is heated by a jet of steam sent through it from a stationary boiler at the stable. The compound being heated is dissolved into liquid, and upon cooling throws out into the car the heat stored in it. This heat is pleasant and moist, and gives a comfortable degree of heat, an average of 60° F. being maintained.

THE Parliamentary return of tramways of the United Kingdom shows that in June last year there were ten lines of tramway open for traffic, and another in course of construction in Ireland, and of these the unfinished one and three others are connected with Dublin. The total distance covered by the whole of the Irish lines is only seventy miles, of which Dublin claims forty-four, leaving an aggregate of only twenty-six miles to serve the rest of the country. Happy Ireland!

THE West Division Street Railway Company, Chicago, has elected the following officers: President, J. R. Jones; vice-president, B. H. Campbell; secretary and treasurer, George L. Webb; superintendent, James K. Lake. The Chicago City Railway Company has elected the following directors: S. B. Cobb, Daniel A. Jones, Samuel W. Allerton, D. K. Pearsons, Erskine M. Phelps, Charles L. Hutchinson and C. B. Holmes.

PROFESSOR OSBORNE REYNOLDS says that steel ropes as transmitters of power have a great advantage over shafts, because the stress on the surface will be uniform, the velocity will be uniform, and may be at least ten to fifteen times as great as with shafts, say, 100 feet per second; the rope is carried on friction pulleys, which may be at distances of 500 or 600 feet, so that the co-efficient of friction will not be more than 0.015 instead of 0.04.

THE City Hall station of the "L" road, New York, is to be removed. An arrangement between the Manhattan Railway Company and the trustees of the New York and Brooklyn bridge provides that the elevated railroad shall connect with the bridge station, but the elevated railroad company will have no interest in the bridge structure.

AFTER the death of Theron R. Butler, Abijah Curtis was chosen to succeed him as president of the Sixth Avenue Railroad Company, and Frank Curtis was elected a director to fill the vacancy. The annual meeting resulted in the reëlection of the old board of directors, with the above change.

A TEN years' lease of the tracks and road, extending from Chatham square to Fulton ferry, New York, has been obtained by the Second Avenue Railroad Company from the Twenty-third and the Bleecker Street and Fulton Ferry Railroad companies, at an annual rental of $3,600.

WILLIAM RICHARDSON, president of the Atlantic avenue Railroad Company, is about to apply to the Brooklyn Common Council for permission to operate the horse cars of his road, at the Adams street hill, by means of a cable.

READERS of the department "Tramways" in this magazine, are invited to look out for other special features in forthcoming numbers, other than that begun on the next page. These, like it, will be of a practical character.

THE Consolidated Street Railroad Company, Columbus, Ohio, have concluded to make arrangements for the repair and manufacture of their own cars in that city, and will erect extensive shops.

J. M. JONES & SONS, car manufacturers in West Troy, have made an assignment to E. C. White, of New York, with preferences of $67,000 to M. M. White & Co., of New York.

ABRAHAM MOOG, the head of the large grocery house of A. & B. Moog, of Mobile, Alabama, is dead. He was the president of the street railroad company.

THIS year's attempt to extend the commission hours on the elevated railroads of New York will probably be unsuccessful.

THE Philadelphia tramway companies paid last year, dividends ranging from ten to sixty-two per cent.

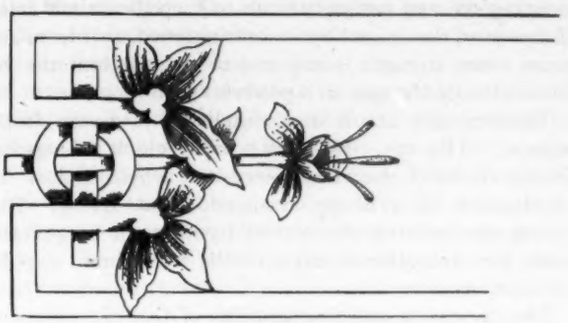


Fig. 4. Corner-post—top and bottom.

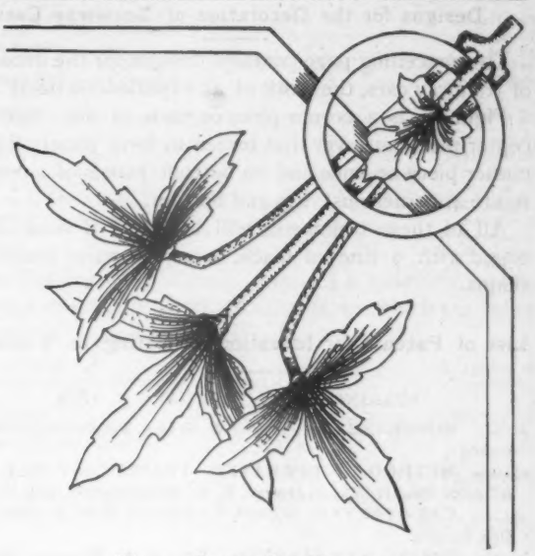


Fig. 3. Corner-piece for ends.

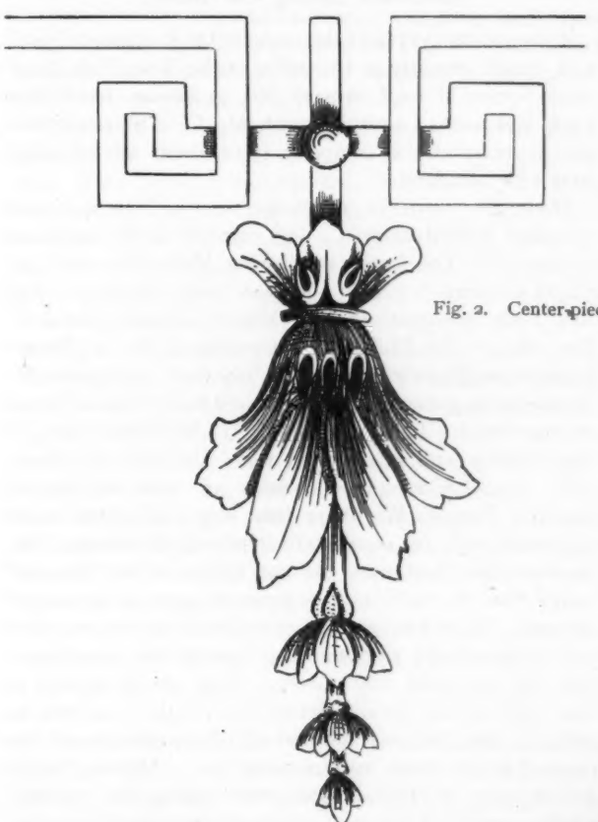


Fig. 2. Center-piece.

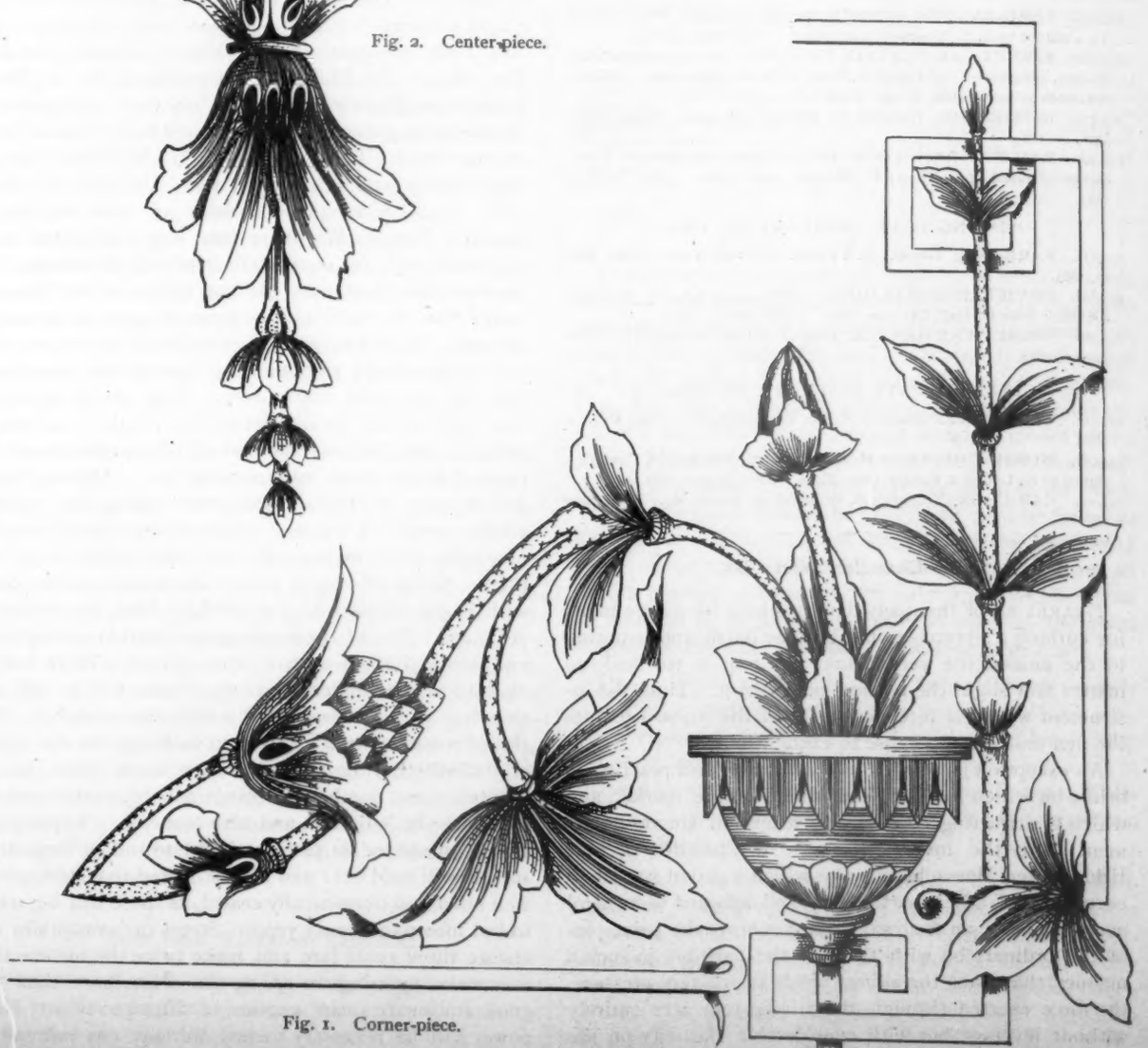


Fig. 1. Corner-piece.

## Designs for the Decoration of Tramway Cars.

THE preceding page contains designs for the decoration of tramway cars, the work of an experienced hand.

Figure 1 is a corner piece on ends of side; figure 2, a center-piece put over iron batten to form panel; figure 3, corner piece on ends and on bottom panels of sides; and figure 4, corner post, top and bottom.

All of these ornaments will look rich if done in gold, edged with a line of black, or equal parts umber and sienna.

## List of Patents for Inventions Relating to Tramways.

BEARING DATE FEBRUARY 5, 1884.

292,843. HORSE-COLLAR: Frazier W. Nevius, Decatur, Ill. Filed July 5, 1883.

293,049. METHOD OF OPERATING TRAINS ON CABLE RAILROADS: Paul H. Mayor, Owego, N. Y. Filed Sept. 15, 1883.

293,119. CAR-STARTER: Wilburt C. Trussell, Boston, Mass. Filed Dec. 10, 1883.

293,204. SPRING CAR-STARTER: William A. Warriner, Franklin, Gloucester county, N. J., assignor, by direct and mesne assignments, of one-half to Olin B. Pendleton, Brooklyn, N. Y., and Jesse Myers, Towanda, Pa. Filed May 24, 1883.

BEARING DATE FEBRUARY 12, 1884.

293,250. FEED-BAG FOR HORSES: George W. Horne, New York, N. Y., assignor to A. A. Knudson, same place. Filed May 9, 1883.

293,291. STREET-CAR-CURTAIN FIXTURE: John Alexander Watt, Boston, assignor of one-fourth to Henry B Sellon and James L. Whitaker, both of Somerville, Mass. Filed July 3, 1883.

293,439. HORSESHOE: Theodore C. Evans, Ludington, Mich. Filed Dec. 26, 1883.

293,592. RAILWAY-RAIL LOCK: Jas. Patterson, Brooklyn, N. Y., assignor of one-half to Henry C. Wright, same place. Filed Nov. 14, 1883.

BEARING DATE FEBRUARY 19, 1884.

293,811. FARE-BOX: Timothy B. Stewart, Hartford, Conn. Filed May 17, 1883.

293,866. DEVICE FOR WELDING STEEL CALKS TO HORSE-SHOES: John D. Hall, Orrville, Ohio. Filed Sept. 4, 1883.

293,962. STREET-CAR HEATER: James F. Gyles, Chicago, Ill. Filed June 8, 1883.

BEARING DATE FEBRUARY 26, 1884.

294,013. CAR-BRAKE: George W. Coffin, Pittsburgh, Pa. Filed Dec. 10, 1883.

294,062. HORSESHOE: Oliver H. Merrill, North Manchester, Conn., assignor to H. Lydall & Foulds, same place. Filed June 2, 1883.

294,194. CAR-DOOR: Frederick B. Brownell, St. Louis, Mo. Filed June 19, 1882.

## The Chandler Safety Bit.

NEARLY all of the many devices which have been made for curbing a nervous horse become harsh and irritating to the animal the very instant the rein is touched, no matter how slight the tension put upon it. Thus the instrument which is intended to curb the horse becomes the first and greatest cause to excite him.

An exception is provided in a humane and practicable bridle bit which has just been placed on the market, and which is attracting considerable attention among horsemen. It is the invention of C. A. Chandler, of East Bridgewater, Massachusetts, for which a patent has lately been granted, and is particularly well adapted to control nervous horses on tramways. It combines the principles of the ordinary bit with those of the curb-bit in such a manner, that when the animal yields to ordinary pressure, the force exerted through the driving-rein acts entirely without leverage, but with considerable elasticity on the mouth-piece, and naturally tends to keep the animal calm. If, however, the animal becomes frightened, or if from any cause more strength is required to manage him, the bit automatically changes to a powerful curb.

This desirable result is accomplished in a very simple manner. The rein-ring is on a lever, which is hinged at the lower end of the check-piece, and is held against the check-piece by a neatly arranged spiral spring. This spring also reduces the wear by forming the hinge itself, while the strength and safety of the bit is in no way dependent upon it.

The cheapness and practicability of this bit commend it to the attention of tramway companies.

## Automatic Spring Car Motor.

A REPRESENTATIVE of the AMERICAN RAILROAD JOURNAL called recently at the office of the New York Automatic Spring Motor Company, No. 39 Nassau street, New York, and had an interview with Mr. C. C. Starkweather, the secretary of the company, from whom the following facts were obtained:

There are now two companies, one in New York and the other in Philadelphia. The name of the Philadelphia company is "The Automatic Spring Motor Car and Carriage Company;" that of the New York company "The New York Automatic Spring Motor Company, limited." The office of the Philadelphia company is No. 126 South Sixth street, Philadelphia. The New York Company simply holds the patent rights to use and build the car motor in that State. The inventor, Mr. D. M. Pfantz, lives in Philadelphia, and his patents were obtained in August, 1883. The Philadelphia company are now building at Naylor's People's Works, in that city, a full-sized street car which will be completed in about six weeks. Mr. Starkweather had seen the car within a few days, and stated that it could now be counted upon as an assured success. There was no new principle involved, no novel and extraordinary workmanship needed, and the companies did not need any money. They simply wished to wait and let the public decide, and in the long run, he believed the cheapest method of transportation yet discovered would come into universal use. Messrs. Disstin & Company, of Philadelphia, are making the springs, which consist of strips of polished steel about forty-five feet long, three inches wide and one-eighth of an inch thick. Strips of steel of these dimensions were tempered with an exactitude which would have been impossible ten years ago. Ten of these springs are used in one cylinder, and are estimated at five horse power. There will be eight of these cylinders, and one cylinder will be sufficient to propel a loaded car about a mile and an eighth. The skilled workmen now engaged in building the car expect no difficulty in running it. They, however, state that ultimately a less number of springs will be needed, and the car can be built lighter, and with less cost. A spring car can be made for $1,500, warranted to run as long as the springs will hold out; and it is estimated that steel springs well oiled and hermetically sealed, as these will be, ought to last fifteen or twenty years. Street car companies can charge three cents fare and make twice the income they now make, by using the spring car. Not more than two good stationary steam engines of fifteen to twenty horse power will be necessary to any ordinary city railroad to

wind the springs. The steam engines can be placed at both ends of the route, and when not in use for winding, can run the company's repair shops. No new tracks would be necessary, no new switches or turn-tables, as the car could run backwards or forwards. As the car made no noise when in motion, and had power enough to go up an incline of 300 feet to the mile, and could triple its driving force at any time when necessary, it would undoubtedly supersede all known appliances now in use for street railways. The highest rate of speed attainable was about thirty miles an hour.

### The Cooney Safety Fender for Cars.

THIS invention of P. H. Cooney is adapted to cable dummies, horse cars, and locomotives of local trains running through densely populated districts; is simple and practical in its workings, and is believed to be a safety guard in every sense of the word.

The device is to be attached near the end of the car in front of the wheels, out of the way, closing up all the open space between the car floor and the track. It accommodates itself to the interior of the car body on its springs, and to the inequalities of the road bed, remaining at all times in position to ward off injury to persons, by preventing them from getting under the car and wheels. It is automatic, and consists of a two-part hinged guard, having a diamond-shaped rubber cushion nose piece, traveling just above the road bed. The fender is protected from wear or friction on pavements or cross rails, offering no resistance to the natural movements of the car in any way. Its nose piece is constructed of thick, hollow rubber, is elastic, and yields sufficiently to prevent any injury to persons that may be struck by it. A person striking the fender in front could not possibly be dragged beneath, for the reason that being struck above or in front, forces the nose piece down.

Inquiries are answered by John H. Dawson, corner Valencia and 23d streets, San Francisco, California.

HOW TO MAKE LUMINOUS PAINT.—A certain quantity of oyster shells are taken and cleaned with hot water; they are placed at a fire for half an hour, being then withdrawn and allowed to cool. They are then pounded so as to obtain a fine powder, care being taken to separate the portion which presents a grey tinge, this powder being placed in a crucible with sulphur in alternate layers. The lid is put on and carefully cemented, the vessel being then left an hour on the fire. Once the crucible is cooled, it is opened, and it then only remains to sift the powder it contains, care having been previously taken to put aside the portions not entirely white. The powder thus prepared, mixed in the color and a certain quantity of gum, gives a coating of paint which remains luminous in the dark when it has been submitted during the day to the action of light. Two light coats produce more effect than a single heavy one.

### New York Elevated Railroads.

THE New York Elevated Railroad Company has filed with the Railroad Commissioners a quarterly statement to December 31, 1883, as follows:

| | | |
|---|---|---|
| Cost of road and equipment | | $14,345,318 44 |
| Real estate | | 226,431 95 |
| Cash on hand | | 242 74 |
| Sundries | | 16,685 20 |
| Manhattan Railroad Company loan | | 709,266 02 |
| Total | | $15,298,444 35 |
| Liabilities | | $6,500,000 00 |
| Funded debt | | 8,500,000 00 |
| Interest | | 245 00 |
| Dividends unpaid | | 85,218 00 |
| Rental from Manhattan | | 5,000 00 |
| Profit and loss | | 207,981 35 |
| Total | | $15,292,444 35 |

The Manhattan Railroad Company's quarterly report, exclusive of structure and personal taxes, which are being disputed in the courts, shows:

| | | |
|---|---|---|
| Gross earnings | | $1,743,829 08 |
| Operating expenses, including water tax | | 992,091 00 |
| Net earnings | | $751,738 08 |
| Operating cost, $56.99 | | |
| Income from other sources | | 21,374 80 |
| Total | | $778,112 88 |
| Elevated R. R. bonds and rentals | $346,239 01 | |
| Real estate capital, State and city taxes | 24,061 52 | |
| Rents | 3,000 00 | 373,300 53 |
| Balance | | $399,812 35 |
| The general balance sheet is: Lease of road and equipment | | $13,000,000 00 |
| Stocks and bonds | | 6,730,810 00 |
| Real estate | | 623,649 64 |
| Due by agents and others | | 167,473 92 |
| Supplies on hand | | 136,473 49 |
| Cash on hand | | 259,811 51 |
| Sundries | | 1,110,157 65 |
| Taxes on Elevated structure | | 186,187 41 |
| On deposit with Trust Company pending suits | | 282,527 80 |
| Total | | $22,497,091 42 |
| Capital stock—common | | $13,000,000 00 |
| Capital stock—preferred | | 6,150,700 00 |
| Bonds, etc | | 250,400 00 |
| Loans and bills payable | | 806,749 52 |
| Interest and rentals | | 25,109 89 |
| Due for wages, etc | | 359,647 98 |
| Sundries | | 1,142,213 40 |
| Profit and loss | | 762,270 63 |
| Total | | $22,497,001 42 |

THE phosphorus lamp, which is said to be in use in Paris by watch men in magazines where inflammable or explosive materials are stored, is prepared as follows: A clean glass phial of oblong shape (dimensions not stated) is taken and filled with boiling olive oil to about one-third of its volume. Into this is dropped a piece of phosphorus about the size of a pea, after which the phial is tightly closed with a cork. When it is required for use, the cork is removed, the air is allowed to re-enter, and the phial is recorked. The empty space above the liquid will then be found to have become luminous, the intensity of the luminosity being about equal, it is said, to that obtained from an ordinary lamp. As soon as the light grows feeble, it can be restored to its former intensity by opening the phial and permitting the entrance of a fresh supply of air.

DEAN BROS., of Indianapolis, Indiana, have recently furnished a complete set of water works for a large lumber company at Eau Claire, Wisconsin, also a large pump for the Clarksville (Tennessee) water works, and a set of vertical pumping machinery for the Citico Furnace, Chattanooga, Tennessee, the capacity of which is one million gallons per day.

JAMES JOURDAN, receiver of the Brighton Beach Railroad, has been given authority by Justice Pratt, in the Supreme Court, Brooklyn, to issue certificates of indebtedness for $75,000, which is to be used in making necessary repairs to the railroad and to the Brighton Beach Hotel. A pleasant suggestion of summer recreation in this.

# New Inventions.

## IMPORTANT TO INVENTORS.

THIS department of the AMERICAN RAILROAD JOURNAL is devoted to descriptions of the many and interesting New Inventions applicable to railroads, and in order to make it as complete as possible, inventors whose improvements properly come under this description, are invited to send us a detailed account of the same. This should consist of facts only, presented in clear and concise language, written only on one side of the paper, and the sheets numbered consecutively. In all cases in which it is desirable and practicable, the written description should be accompanied by a cut or cuts illustrating the invention. This or these should be marked distinctly on the bottom, with the name and address of the sender. All cuts received are preserved at this office, or returned, if desired, to the person sending them to us for use. As we have an engraving department we are prepared to make cuts, and furnish estimates of our charges for the same to those persons who write us for such particulars. That we may estimate exactly and without delay, it is necessary that we have sent to us, a photograph of the Model and a copy of the Specifications.

The reader of course understands that the editors reserve their inalienable rights to decide what "copy" they shall use, what changes shall be made in it, if any, and when they shall use it; but they guarantee the impartial consideration of every description sent them.

Descriptive articles relating to Tramways will be placed in that department.

## List of Patents for Inventions Relating to Railways, Machinery, Etc.

### BEARING DATE FEBRUARY 5, 1884.

292,793. CAR-BRAKE: Joseph C. Dane, La Crosse, Wis., assignor of two-thirds to Lucinda S. Card and Forrest J. Smith, both of same place. Filed April 13, 1883.

292,820. CAR-COUPLING: William Hunter, Grindstone City, Mich. Filed Oct. 16, 1883.

292,827. BRAKE-SHOE: John Joseph Lappin, Toronto, Ontario, Canada. Filed May 25, 1883.

292,834. SAFETY-GUARD FOR RAILROAD-FROGS: John Lynch, New Haven, Mich. Filed June 27, 1883.

292,861. BRAKE-SHOE: George B. Ross, Buffalo, N. Y. Filed Sept. 12, 1883.

292,882. CAR-WHEEL: Nathan Washburn, Allston, Mass. Filed Aug. 1, 1883.

292,895. CAR-COUPLING: James W. Childs, Cedar Run, Pa. Filed Dec. 15, 1883.

292,897. SWITCH-STAND: Pressley Coleman, Haysville, Pa. Filed Oct. 15, 1883.

292,910. CAR-COUPLING: John McD. Harper, Colfax, Wash. Filed Nov. 8, 1883.

292,975. MAIL-BAG CATCHER: William Angle, Welsh Run, Pa. Filed Nov. 26, 1883.

293,024. LIFE-PROTECTOR FOR RAILROAD-RAILS: Edward J. Hoffman, Sioux City, Iowa. Filed May 1, 1883.

293,026. RAILROAD-SWITCH MOVER: George W. Horne, New York, N. Y., assignor of one-fourth to Benjamin A. Dare, same place. Filed Aug. 7, 1883.

293,053. CAR-COUPLING: Frank L. McQuiston, Greencastle, Iowa. Filed May 4, 1883.

293,071. HUB FOR CAR-WHEELS: Geo. Peacock, Selma, Ala. Filed Dec. 14, 1883.

293,083. CAR-DOOR FASTENING: Jacob Rhule, Pittsburgh, Pa., assignor to himself and Onslow K. Gardner, same place. Filed Oct. 12, 1883.

293,124. CAR-DOOR FASTENER: John L. Wagner, Terre Haute, Ind., assignor of two-thirds to Tompkins A. Lewis, Indianapolis, Ind., and Henry R. Duvall, New York, N. Y. Filed July 12, 1883.

293,132. CAR-COUPLING: John E. Anger and David Porter, Schenectady, N. Y. Filed Aug. 20, 1883.

293,194. PREVENTING RAILROAD-TRACKS FROM SPREADING: John Reven, Lancaster, Pa. Filed May 9, 1883.

293,201. CAR-AXLE: George W. Stewart, Atlanta, Ga., assignor to James F. Wenman, New York, N. Y. Filed Oct. 8, 1883.

### BEARING DATE FEBRUARY 12, 1884.

293,211. CAR-WHEEL: Richard N. Allen, Cleveland, Ohio. Filed July, 28, 1883.

293,264. COMBINED CAR BRAKE AND COUPLER: Edward B. Meatyard, Lake Geneva, Wis. Filed May 7, 1883.

293,265. RAILWAY-CAR: Edward B. Meatyard, Lake Geneva, Wis. Filed May 7, 1883.

293,285. STOCK-CAR: Luther R. Stiles, Chicago, Ill. Filed Nov. 24, 1883.

293,302. FASTENING RAILWAY-RAILS TO METALLIC TIES: George W. Bloodgood, Wyandotte, Mich. Filed July 14, 1883.

293,319. CAR-BRAKE: John M. Grace, Chicago, Ill., assignor of one-half to Francis R. Murphy, same place. Filed March 27, 1883.

293,325. CAR-COUPLING: Charles A. Hansgen and James R. Coleman, Rock Island, Ill. Filed Oct. 19, 1883.

293,350. LOCOMOTIVE ASH-PAN: William H. D. Newth, Detroit, Mich. Filed Aug. 27, 1883.

293,381. ELECTRIC RAILWAY-SIGNAL: James C. Upham, North Sydney, and John P. Rogers, Elmsdale, Nova Scotia, Canada. Filed March 12, 1883. Renewed Dec. 8, 1883.

293,431. SPIKE-EXTRACTOR: John Ebbert, Rockaway Beach, N. Y., assignor to Phillip A. Hall, Chicago, Ill. Filed Dec. 8, 1883.

293,433. INSULATION OF RAILROAD-TRACKS USED FOR ELECTRIC CIRCUITS: Thomas A. Edison, Menlo Park, N. J., assignor, by mesne assignments, to the Electric Railway Company of the United States, of New York. Filed Aug. 9, 1880.

293,442. CAR-COUPLING: Cornelius Flynn, Brooklyn, N. Y. Filed June 12, 1883.

293,447. CAR-ROOFING: Albert W. Gilmore, Chicago, Ill. Filed Nov. 1, 1883.

293,466. CAR-COUPLING: Lorenzo D. Hooper, Coffeyville, Kans. Filed Sept. 6, 1883.

293,467. UNLOADING PLATFORM-CARS: Jas. Houlehan, Toledo, Ohio, assignor of one-half to Rathbun Fuller, same place. Filed Dec. 14, 1883.

263,479. RAILWAY-FREIGHT-CAR DOOR: Nils P. Liljeholm, St. Louis, Mo., assignor of one-third to Henry Goetz, same place. Filed Nov. 7, 1883.

293,546. RAILWAY-RAIL CHAIR: George Weeks, East Oakland, Cal. Filed Nov. 10, 1883.

293,555. TRAVELING SIGN FOR CARS: Thomas H. Bowles, Atlanta, Ga. Filed Jan. 8, 1884.

293,578. CAR-VENTILATOR: Owen H. Jones, Hartford, Conn., assignor of one-half to Frank C. Smith, New York, N. Y. Filed Feb. 15, 1883.

293,579. CAR-COUPLING: Thomas Coke Jones, Willows, Cal. Filed June 15, 1883.

293,602. LOCOMOTIVE-GRATE: Isaac W. Swallow, Kingston, Pa. Filed Oct. 29, 1883.

293,608. RAILWAY-CAR: Thomas L. Wilson, Port Hope, Ontario, assignor of one-half to Austin D. Cable, Montreal, Canada. Filed Jan. 2, 1884.

293,614. JOURNAL-LUBRICATING BOX: George F. Senter, New York, N. Y. Filed Aug. 30, 1881. Renewed Aug. 16, 1883.

### BEARING DATE FEBRUARY 19, 1884.

298,618. CAR-COUPLING: James Larken Bias, Guyandotte, W. Va. Filed Dec. 19, 1883.

293,644. DEVICE FOR SECURING THE SPLICE-JOINTS OF RAILROAD-RAILS: David L. Emry, Carthage, Mo. Filed Nov. 26, 1883.

293,653. LIFE-GUARD AND TRACK-CLEARER: Chas. W. Held and Richd. B. Locke, Brooklyn, N. Y. Filed April 7, 1883.

293,660. RAILWAY-SWITCH AND CROSSING: Daniel McCarthy, Norwich, Conn., assignor to Patrick J. O'Connor, same place. Filed June 20, 1883.

293,695. RAILWAY-CAR STOVE: Alonzo P. Winslow, Cleveland, Ohio. Filed June 25, 1883.

293,705. LUBRICATOR: Addison Bradford, Brooklyn, N. Y.; Wm. W. Blackman, Administrator of said Addison Bradford, deceased, assignor of five-sixteenths to Theodore C. Wiggins, same place, Aaron R. Smith, New Brighton, and Albert S. Comstock, New York, N. Y. Filed July 25, 1883.

293,713. CAR-COUPLING: Geo. Bryan, Chicago, Ill., assignor of one-half to Alphonso Goodrich, same place. Filed June 11, 1883.

293,727. CAR-COUPLING: Alpheus Fay, Columbia, Tenn., assignor of one-fourth to Zillmon Smith, Maury county, Tenn. Filed June 5, 1883.

293,752. COVERING FOR STEAM BOILERS, PIPES, AND OTHER HEATED SURFACES: Edward Krahenbeihl and Paul Rice, Allegheny, Pa. Filed Oct. 10, 1883.

293,757. CAR-COUPLING: John J. Lloyd, Streator, Ill. Filed May 22, 1883.

293,763. CAR-TRUCK: Alexander E. McConnell, New Orleans, La. Filed June 27, 1883.

293,823. CAR-BRAKE: Charles Tregoning, Lead City, Dak. Filed Dec. 31, 1883.

293,832. REFRIGERATING CAR AND APPARATUS FOR SHIPPING MEAT: Herman G. Widman, San Francisco, Cal. Filed Nov. 12, 1883.

293,846. DEVICE FOR ARRESTING LOCOMOTIVES AND CARS: Maximilian F. Bonzano, Philadelphia, Pa. Filed Nov. 21, 1883.

293,899. CAR-COUPLING: John Martin, Knight's Ferry, Cal. Filed Nov. 12, 1883.

293,967. CAR-VENTILATOR: Owen H. Jones, Hartford, Conn., assignor of one-half to Frank C. Smith. New York, N. Y. Filed May 14, 1883.

293,993. ELECTRO-MAGNETIC CAR-BRAKE: Jas. E. Withers, Henderson, Ky., assignor to Robert A. Holloway, same place. Filed Nov. 21, 1883.

293,995. CAR-COUPLING: Frederick M. Wright, Fern Ridge, Mo. Filed Nov. 16, 1883.

BEARING DATE FEBRUARY 26, 1884.

293,996. CAR-REPLACER: Robert E. Alexander, Niagara, Pa. Filed May 12, 1883.

294,016. CAR-VENTILATOR: William E. Cowen, Defiance, Ohio. Filed Oct. 9, 1882. Renewed Aug. 15, 1883.

294,030. RAILWAY-SIGNAL: Oscar Gassett, Boston, Mass., assignor to the Union Switch and Signal Company, Pittsburgh, Pa. Filed June 6, 1883.

294,053. METHOD OF AND DIE FOR FORMING RAIL-JOINTS: Francis Lightfoot. Media, Pa. Filed May 12, 1883.

294,084. SNOW-CLEARER FOR TRACKS, ETC.: Louis Schulze, Philadelphia, Pa., assignor of one-half to William Briscoe, same place. Filed March 20, 1883.

294,090. CAR-WHEEL: Frederick H. Smith, Baltimore, Md. Filed Aug. 8, 1883.

294,100. SWITCH-STAND: Fredric C. Weir, Cincinnati, Ohio. Filed Feb. 12, 1883.

294,101. RAILWAY-RAIL JOINT: Fredric C. Weir, Cincinnati, Ohio. Filed Feb. 12, 1883.

294,116. RAILWAY-SIGNAL: Bert Buys, Reese, Mich., assignor of one-third to Frank Wilcox, same place. Filed Nov. 3, 1883.

294,124. CAR-COUPLING: Edward L. Granger, South Manchester, Conn., assignor, by mesne assignments, to the Granger Automatic Car-Coupling Company, of New York. Filed Feb. 26, 1883.

294,126. TRACK OR ROAD-BED: Seth Griffin, New York, N. Y., assignor of one-half to William Halkyard, Providence, R. I. Filed Oct. 15, 1883.

294,127. CAR-COUPLING: Daniel Ambrose Grounds and James Rambo Gibson, Hope, Ark. Filed Dec. 13, 1883.

294,140. CAR-TRUCK: James E. Mason, Blanchard, Pa. Filed Dec. 26, 1883.

294,166. METALLIC RAILOAD-TIE: Charles H. Van Orden, Catskill, N. Y. Filed Aug. 23, 1883.

294,172. RAILWAY GATE AND SIGNAL: Henry F. Wight, Boston, and Hosea P. Aldrich, Somerville, assignors of one-half to Samuel N. Aldrich, Marlboro, Mass. Filed Dec. 8, 1883.

294,191. RAILROAD-TIE: Thos. Breen, Knowlton, Pa. Filed May 25, 1883.

294,206. RAILWAY-SIGNALING APPARATUS: Wm. N. Dawson, Adel, Iowa. Filed June 14, 1883.

294,207. ALARM-SIGNAL FOR RAILROAD CROSSINGS: John B. Deeds and Joseph H. Blake, Terre Haute, Ind.; said Deeds assignor to said Blake. Filed April 7, 1883.

294,209. REFRIGERATING APPARATUS FOR CARS, ETC. Wm. H. Doughty, New York, N. Y. Filed Oct. 22, 1883.

294,245. RAILROAD-RAIL: Francis Lightfoot, Media, Pa. Filed Oct. 19, 1883.

294,252. LOCOMOTIVE: Alexander Mitchell, Wilkesbarre, Pa. Filed July 31, 1883.

294,266. CAR-COUPLING: Hiram Pidcock, Burlington Junction, Mo. Filed Nov. 28, 1883.

294,306. CAR-BRAKE: William Brumble, Baltimore, Md. Filed Jan. 19, 1884.

294,331. SLEEPING-CAR: Thomas Clarke, Truro, Nova Scotia, Canada, William H. Paulding, Peekskill, and George Reinl, New York, N. Y. Filed June 29, 1882.

## The Rote Automatic Brake.

THIS brake belongs to the class of compression brakes, the brakes being applied by the compression of the draw bar, when the speed of the engine is checked. A simple device, controlled by the speed of movement of the car automatically regulates or controls the brake-setting mechanism, rendering the latter operative or inoperative as occasion requires. The brake mechanism is inoperative while the car is at rest, but becomes automatically locked in operative position by the movement of the car when the latter is being drawn, and is ready to be applied when needed, as soon as a speed of about two miles per hour is reached. After the car has been at speed and the brakes are applied, they hold until just before a complete stop is reached, when they are automatically released, and the train is free to be immediately backed without first taking up the slack. The train does not move more than four or five yards after the brakes are thus automatically released, yet they are infallibly released before a complete stop is reached. The speed of the train may be restored at any time at the will of the engineer, the simple act of pulling out freeing the brakes. There is no obstacle or hindrance to pushing or backing a car or train at any rate of speed.

George B. Trout, engineer Strasburg Railroad, Strasburg, Pennsylvania, has made a statement as to how the Rote Automatic Independent Car Brake worked while it was under his supervision on the Strasburg Railroad.

The following are extracts from his published statement:

"We experimented five days with the Rote Brake, and it gave entire satisfaction in every respect during the whole time. We tried the brake the second day on a grade of seventy feet to the mile, at the rate of twenty miles an hour. The train consisted of the engine, an empty gondola flat car, equipped with the Rote Brake, and placed next to the engine, with two loaded freight cars and a passenger car behind. By shutting off steam and applying the hand brake to the engine (we had no air or steam driver brake) we made several complete stops in from fourteen to twenty seconds. The brakes on the passenger car and the two loaded freight cars were not used, so the Rote Brake on the empty gondola car had no help from them. We tried this several times, always with equally good results. The Brake gave more than satisfaction in every respect, never balking once in the five days we used it. I think the day is not far distant when a train will not be considered properly equipped without the Rote Brake."

## Two New Clayton Pumps.

TWO new pumps have been added to the large variety manufactured at the Clayton Steam Pump Works, Nos. 45 and 47 York street, Brooklyn.

One is a new hand pump giving a high pressure of air for experimental purposes. This pressure, of from fifty to three hundred pounds, is produced either by hand or belt power. A public need is met by this successful invention, for which a large demand is assured.

The new ammonia pump for refrigerating purposes exactly answers to the requirements of fruit stores, breweries, etc., where a moderate degree of cold is desired; and is produced opportunely for the approaching hot season. It is a double-action pump, possessing, of course, double the efficiency of a single-action pump.

INFORMATION of value to needy inventors can be procured from the Humanitarian Invention Association, No. 13 Central Square, Youngstown, Ohio.

IN a recent British invention two or more indicator cylinders are fitted to one drum or roller for the purpose of taking the simultaneous diagrams of the boiler pressure, cylinder pressure, cylinder vacuum and condenser vacuum, and by using pencils of different colors, such diagrams can be distinctly read.

### Improved Portable Hoisting Engine.

THE Lidgerwood Manufacturing Company, No. 96 Liberty street, New York, are building the Improved Portable Hoisting Engine. It is designed to meet all the requirements of a portable hoisting engine, namely, a frequent change of position over all kinds of roads, and the same to be done without damage to the engine or boiler by jolting and jarring. A want is thus met which railroad companies will be among the first to hail with satisfaction.

IMPROVED PORTABLE HOISTING ENGINE.

The hoisting engine is of the double cylinder, patent friction drum type, and is mounted upon a heavy, substantial bed-plate, faced off to receive cylinders, standards, etc. To this bed-plate are attached the springs, which are the same style as used on the heaviest trucks, and are made of the best quality of steel. These bear on substantial wrought iron axles. The forward axle is straight, and the rear one a crank axle passing under the boiler. Under the forward part is a fifth wheel of wrought iron, properly braced and supported, which enables the machine to be turned around very easily, as the forward wheels pass under the bed-plate in so doing. When the engine is at work, the strain is taken off the springs by means of an easily operated arrangement which makes the whole engine perfectly solid when working, the wheels being chocked in the usual way.

The boiler is suspended from the rear of the bed-plate by stout lugs, is of a compact form specially designed for the purpose, and steams very freely and quickly. It is made of the best quality of shell and flange iron, and is supplied with all fittings complete. On the top of the boiler is a substantial cast iron dome or bonnet, with a hinged smoke stack, which can be lowered for transportation, and which is supplied with a spark arrester. This boiler in dimensions, has been specially designed by the

company to steam quickly and freely, with the least possible expenditure of fuel. All of the fittings used on the boiler are manufactured by the company on special tools, and are of superior quality.

The hoisting engine is fitted with the patent friction drum, made by the Lidgerwood Manufacturing Company, with a powerful foot brake. This drum is well-known to be a decided improvement, far superior to the old clutch engine for every kind of hoisting duty. It is much quicker to manage and handle, thereby doubling the amount of work accomplished, as well as doing it much more satisfactorily. It will also outwear any clutch engine, at least two to one, and does not get out of order. The friction is composed of iron and wood, the wood being of the hardest kind, placed endwise of the grain to the wear, and will last for years with all kinds of hard duty.

In operating the engine, the man stands on the foot board, as shown on the engraving. This foot board, when the engine is being moved around, is turned up on its side out of the way. The seat for the driver rests on the drum of the engine.

The wheels, axles, springs, and the whole running gear are of extra quality, and the facility with which the new engine can be transported over the country, either on rough roads or pavements, and its special adaptability for all railroads, contractors, and bridge builders, who need an engine adapted for all general hoisting and pile-driving purposes, give its introduction great importance. It was designed on purpose to meet the requirements of railroads and bridge builders, and for dock purposes where the engine has to be transferred from one dock to another.

If required, the manufacturers furnish a compact and substantial house covering the whole machine except the wheels. It has sliding doors on all sides, and is specially adapted for the engine.

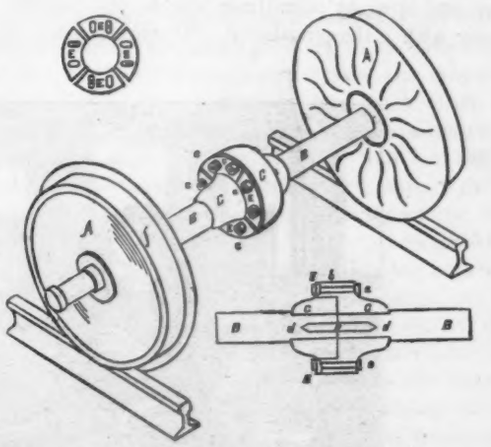
The first three of the Improved Portable Hoisting Engines are at work on the docks of Messrs. Constantine & Co., of New York, the fourth one is in the city of Boston, the fifth one is in the shops of the company, and the sixth one is at work in the city of Newton, Massachusetts.

Every part is made to gauge and templet, and is carried in stock by the company, so that in case of any wear or breakage, parts can be supplied without delay.

### The Tompkins Automatic Car Coupler.

THIS consists of the common form of wrought or cast draw-heads, and two springs that fasten to the bottom of the same by one sprink keg. These pass along the bottom of the draw-head about five inches, thence upward through slats in the upper and lower walls of the draw-head, and at the top curve together to catch the head of the pin when it is raised. The link entering the draw-head spreads the springs and releases the pin. The springs being more rigid at the bottom than at the top, press the link up as they hold it and make it sure to enter the opposite draw-head. With a straight link it is sure to couple where the draw-heads do not vary more than three and one-half inches in height, and a crooked link can be used equally well and will automatically couple those varying more. A housing or cap forms a guide for the pin and a protection from storms. The pin can be raised while a link is in place and will stay there, which is very necessary in doing yard work; but when the cars are moved apart it readily adjusts itself to drop as the next link enters, the removing of the link adjusting it. It can be uncoupled either from the top by a chain or from either side by a lever, or more simply by taking hold of the pin as in the common draw-head. The cost is but little more than the common couplings. The Tompkins coupler is used by the Adirondack Railway Company, and is strongly recommended by that corporation. Correspondence is solicited by D. McMurray, Fort Edward, New York.

### The Bedbury Car-Axle.



IT is an admitted fact that the friction on curves is produced by the wheel on the upper rail having to slide a certain distance on the rail. As the outer rail on a curve must necessarily be of a longer distance than the inner one, it certainly follows that the outer wheel has more revolutions to make, which cannot be done on a rigid axle; so it is plain to see the advantages of this axle. Again, this axle prevents jumping the rail on curves. The inventor claims that the cause of jumping the rail is the sliding of the wheel on the upper rail—that is, in many instances. With this axle, many of those accidents are obviated; and the claim is made that this axle removes from eighty to ninety per cent. of the friction now produced on the curves, thus saving fuel and wear of locomotive. The joint for the division of the axle is as near dust-proof as can be for such a purpose. The holes for lubricating, the cut does not show; for that purpose a hole is made in each quarter, from the surface to the center, with a screw plug, thereby keeping it dust-proof. It requires lubricating but about once in three months, as it has so few revolutions to perform. Again, all the axles now in use can be remodeled to this form at a small expense, which can not be said of any other axle for this purpose. This axle is provided for taking up all the wear that may be produced, as it will be observed that the flange which holds the axle together is beveled on the inner side, and fitting on a reverse bevel on the casting. The flange (or collar) is in three or four pieces, with slotted bolt-holes, and by loosening up the bolts, and pressing the flange in, a perfect fit is obtained. The manufacturers will permit any corporation to test it, and will send a competent man to superintend its construction, or full detail drawings, as they may direct.

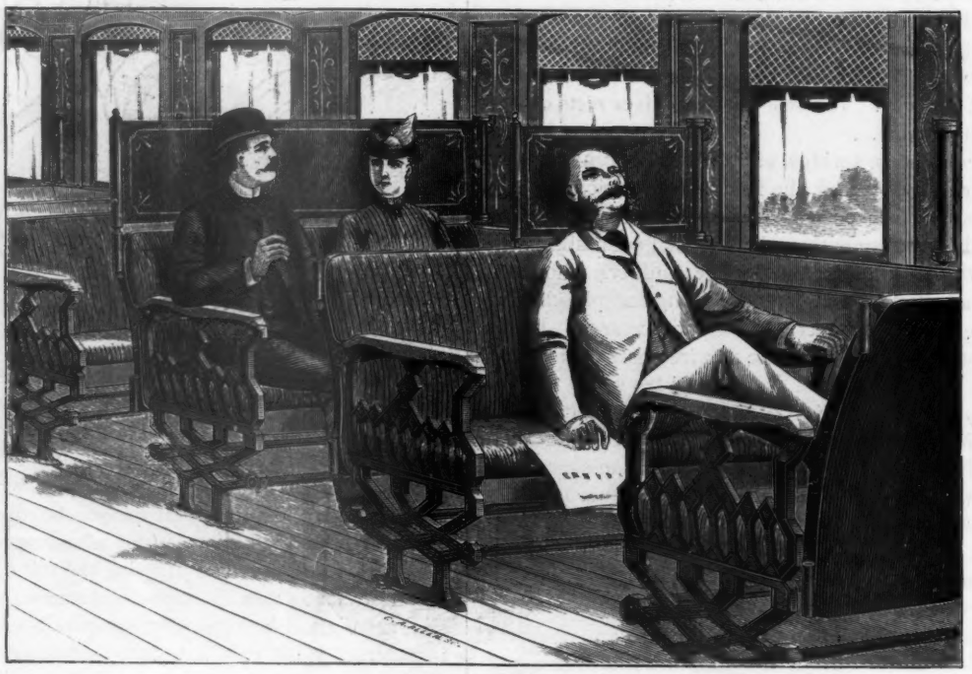
For any further particulars, address the Bedbury Car-Axle Company, Portland, Oregon.

### Osgood's Improvement in Railway Passenger Cars.

THE engraving partially represents the improvement in passenger cars, invented and patented by E. P. Osgood, No. 156 Hanover street, Boston.

It consists of a flexible curtain, rolling automatically, and pulling out from the side of the car, and on line with the back of the car seat. It can be applied to any passenger car, and be easily adjusted and firmly held in position, forming a partial seclusion and also a comfortable head-rest to the occupant. In traveling many hours, and on weary journeys, it would serve as a comfortable rest by day, and at night oftentimes enable the traveler to dispense with a sleeping-berth. Draughts from open windows in front or rear can be avoided without troubling others. Conversation may be carried on with a friend, or lunch taken without attracting attention. The improvement is useful and ornamental, and something every traveler would appreciate.

Mr. Osgood will answer inquiries.



OSGOOD'S IMPROVEMENT IN RAILWAY PASSENGER CARS.

### The Garton Snow Plow.

THIS newly-patented invention is similar in shape to the ordinary plow, but flatter at the point, where it enters the snow. It is furnished with a steel flange on each side and one in the center, of any width necessary, from one foot upwards.

All the flanges at the front enter the snow on the perpendicular, but those on the outside lean over until at the back end, they show themselves a little above the level or horizontal line. The center flange preserves its perpendicular about two-thirds of its length, where it branches off into two flanges, and, forming curves towards the outer edge in order to throw the snow, clears the track. The face of the plow forms a sort of mold-board, flat where it enters the snow, but gently rising in the center, and forming quite a ridge, increasing in height till it reaches the top of the said ridge.

The patentee claims that the center board with its curves or mold-boards, as above described, will throw the snow clear out of the way. He believes that it excels all other snow plows, from the fact that instead of pushing the snow in front and on each side, and with the power of an engine pressing it into a solid mass almost equal to ice, its sharp edge enters the snow gently, with such ease that it rises and makes its escape from the top, just in proportion to the speed of the train. This is all done without pressure or force, and with little or no hindrance to the train. Mr. Garton is perfectly satisfied that a train at Albany, with his plow in front, would run from thence to Buffalo, through snow four feet deep, the whole distance without delay, representing a value of one thousand dollars per day,

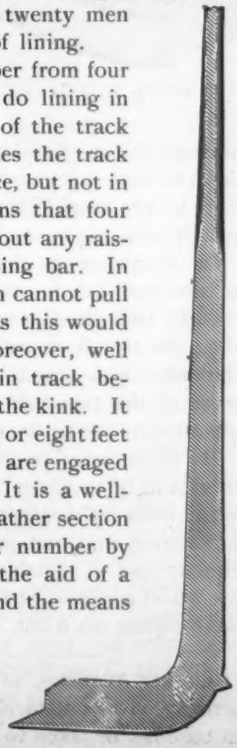
A great merit of Mr. Garton's plow is its simplicity. Moreover it is cheap, its very probable efficiency being regarded. To further its introduction, the inventor is prepared to deal liberally with any person who will start the first plow. Prominent Canadian railroad men are interesting themselves in the device, which is patented in the Dominion as well as in the United States.

David B. Garton, Barrie, Ontario, Canada, is patentee of the snow plow named after him.

A NEW cross tie, on which United States letters patent have been granted, consists of a vertical web, bottom flange, and top flange or head. The top flange or head is provided, adjoining the web, with vertical perforations to receive the legs of staples provided on their upper inner sides with flanges, for the purpose of holding the rails and keys.

### Noonan's Railway Lining Bar.

THIS invention of B. J. Noonan, Fern Ridge, Missouri, consists of an iron hand bar, as shown in the engraving. It is especially adapted to lining purposes where section gangs number only three or four men. In this case the lining bar is reported to have a capacity of ten men itself, and two men using it, and two others using a straight bar opposite it, can line track that twenty men could not move in the old style of lining.



Section gangs generally number from four to six men, and are unable to do lining in many instances, as in the case of the track being filled in heavy. Oftentimes the track may be level and in good surface, but not in good line. The inventor claims that four men can do all this lining without any raising or surfacing, by using his lining bar. In "gumbo" regions, where six men cannot pull a line to rail, such an appliance as this would be of great service. It is, moreover, well adapted to lining kinked rails in track because it provides a direct pull on the kink. It does not cover the space of six or eight feet as required where a dozen men are engaged in lining up a piece of track. It is a well-known fact that during warm weather section gangs are always short of their number by one or two laying off. Now, by the aid of a lining bar there is always on hand the means to do any lining required, no matter how heavy the track may be, or how badly it may be buried down in the ballast. In using it the workmen should see that there is no material at the ends of the ties in the direction they wish to move the track. This is necessary in order not to injure the smoothness of the track in its new line. The lining bar can be had for a small cost. Every section on the different roads has old claw bars and pinch bars lying around in hand-car houses, which by a little alteration at the machine shop would make a good patent lining bar and save the cost of new material.

### New Reversible Valve Gear for Steam Engines.

NEW reversible valve gear for steam engines has been invented and patented by William B. Turman, of Waldron, Scott County, Arkansas. It consists of two eccentrics on the main shaft of the engine, one of which is set to run the engine forward, and the other set to run the engine backward. Each of these eccentrics gives the motion to a separate slide, a little way apart from each other, and having a notch in their top side. They are situated between the main shaft and the cylinder, and are held in position by slide ways fastened to the bed plate of the engine. Between the notches in said slides and the main shaft, and betwixt the slides is a bracket, through which passes the end of a connecting rod, which has two wrist pins. These are set in proper position to engage, one at a time, in the notches in said slides, and are set at right angles to the rod, at such an angle to each other that when one is in the notch in one of its slides, the other is out of notch in the other slide; and, by rocking the rod over the wrist pin will be thrown into the other slide notch, thus giving the rod a motion to run the engine in an opposite direction to that given by the first position of the rod. Said rod is rocked or turned so as to engage one and disengage the other wrist pin, by means of a sleeve to which a lever is attached. This sleeve is held in place between two brackets fastened to the bed-plate of the engine, and through which sleeve said rod passes. The rod conveys motion to the rock shaft from one of the eccentrics, and by rocking it over with said sleeve and bringing the other one of its wrist pins into the notch of the other slide, it gives motion from the other eccentric to the rock shaft. Moreover, the rod is attached to the rock shaft in such a manner that it may partly turn over to allow its wrist pins to engage alternately in slide notches as before described; or, instead of using a rock shaft, the connecting rod may be jointed to the end of the valve stem by means of a small cross-head. The wrist pins on the rod are kept from being turned out of the notch of either slide, while in the middle of their travel, by a curved bar projecting over the middle of the travel of said notches and close to them, thereby preventing the rod being turned and the engine being reversed, while the valve is in the position to prevent the steam escaping from the cylinder, so that no injury can by done by the compression of the steam in the cylinder by the momentum of the engine.

The essential parts of the invention consist of two eccentries and a connecting rod with two wrist pins, by which the motion of either of the eccentries may be used on the valve, by the operation of simply turning the connecting rod partly over by the attendant.

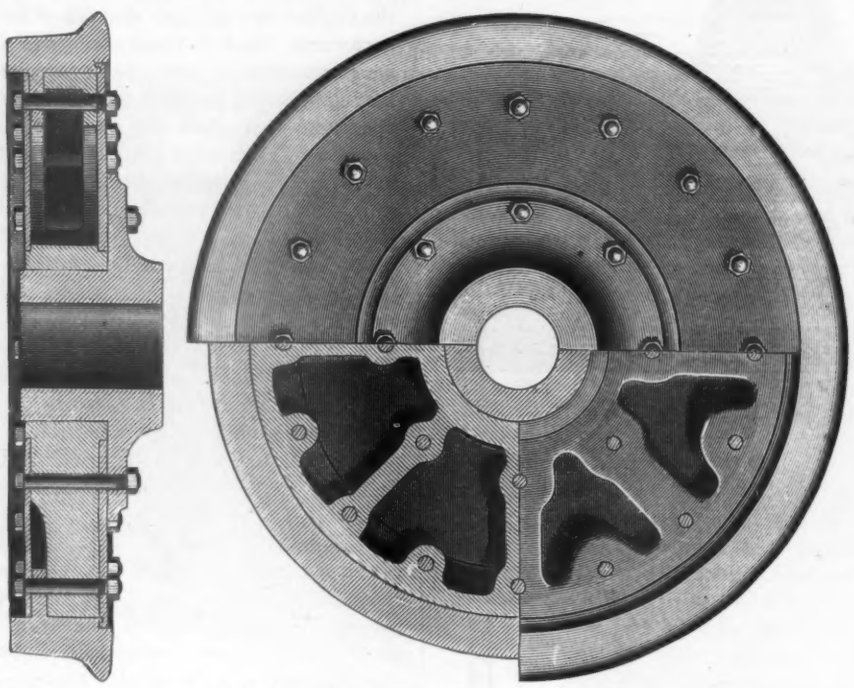
The inventor claims that this arrangement is the cheapest, most perfect working and most easily handled reversing gear for steam engines yet devised. He invites correspondence, which will be promptly answered.

### Snow's Patent Steel Tired Metal Wheel.

W. W. SNOW, general manager of the Ramapo Wheel and Foundry Company, Ramapo, New York, is patentee of the invention described and illustrated below.

Its merits stated briefly are: The internal flange to the tire, presents the best form for strength, with the lowest amount in weight of steel which can be devised. The recess in the back of the tire, and corresponding recess in the back plate, form what may be termed a "retaining ring," so that in case of a portion of the tire breaking, this recess in the tire and plate with the front plate bolts and "retaining ring" will effectually hold the parts firmly together. This tire can be removed without taking the body of the wheel apart.

The independent hub is a very important feature in the construction and utility of this wheel, as shown when sent to the shop for re-turning. It is there found that many tires on one end of the axle, are badly worn in the flange, while the other tire being the hardest, is but slightly worn. In order to get another good flange, it is necessary to turn off from three-eighths to three-fourths of an inch from the soft tire, while the opposite tire may require but a small amount to true it up. With the Snow wheels, in contrast, the hubs being interchangeable, the hub is pressed out from the body of the wheel, instead of removing it from the axle, and the wheels requiring the same amouut of turning are re-applied together; thus saving a large amount of steel lost in the usual way of re-turning, besides placing tires of the same grade of steel together, and producing more uniformity of service on their second application. The axles also being fitted at different shops, have a greater or less diameter in the wheel fit. The independent hubs being all carefully fitted at one shop, to the reamed central filling piece, provides for this interchange of hubs, without any mistake as to their interchangeability, simply by removing the nuts from the bolts in the flange, and without taking the wheel apart. This subject will soon be one of great importance to railroads, in the matter of utilizing their old axles, as they will find in their complications of refitting, there are often cases where the axle may not have given half the service required; yet the hub seat being a little small for the wheel, requires this change to utilize the old axle. It will be readily seen that either the tire or the hub can be removed separately from the body of the wheel, and re-applied with new, in any ordinary machine shop, without taking the wheel apart. The Snow device has but one plain surface presenting itself to the hub of the wheel, to endanger its successful movement in or out of the filling piece, as both back and front plates are not allowed to reach to the bearing surface of the hub. This feature is entirely new, not having been used or patented heretofore.



SNOW'S PATENT STEEL TIRED METAL WHEEL.

The advantages of the iron "central filling piece" will be observed as an important support to the tire, as wrought iron plates have a tendency to wear their edges, when the tire is expanded by the action of the brakes. The bolts also through the filling piece, and internal flange of the tire, hold the tire firmly in position when expanded by the action of the brakes.

The economy of re-applying new tire and hubs to the wheel, will be apparent from the fact, that it can be done in any ordinary machine shop, and all work in an ordinary boring mill and press, at a trifling cost above the ordinary cost of refitting an iron wheel; and all parts of this wheel will always retain their original value, except the tire when worn out.

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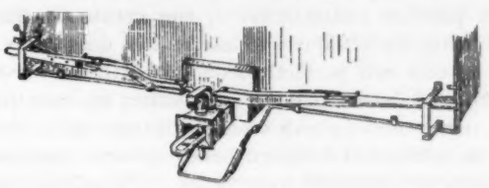
CERTAIN portions, in some proposed foreign railway carriages, are in detachable parts, which may be rapidly put together or taken to pieces without skilled labor, the object being to get sleeping space without increase of size.

### The McLeod Car Coupling.

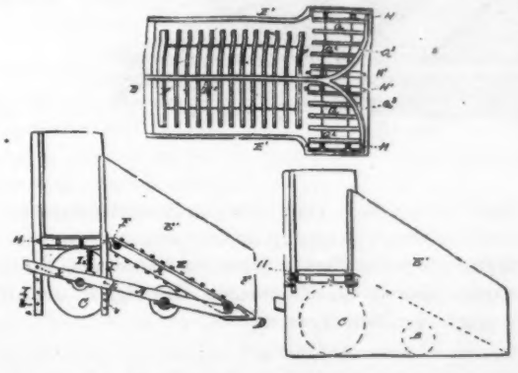
JOHN K. MCLEOD, London, Ontario, who has been granted letters patent on his coupling in both Canada and the United States, claims for it, that it will couple and un-



couple without the danger of going between the cars, and that it can be coupled on to any cars which can be coupled by hand. The levers on the end of the car raise the pin on either side. A spring latch is provided to fasten the lever down if it is required to do so. A small lap on the top of the lever will let the pin down on the bottom of the car. A rod extends from side to side, with a crank centrally located, and by moving the crank on the side of the car the crank will lift the link as high as required; and when let go will fall down out of the way. If it should get caught in the approaching draw-head, the compressed spring will allow it to move with the draw-head when it opens, and will fall down the same. The coupling-pin moves on a rod so that the longitudinal movement of the draw-head has no strain on the levers. The inventor says his coupling has been examined by hundreds of practical railway men of both Canada and the United States and is approved by them.

### Menze's Patent Snow Remover.

THIS is an invention of Friedrich W. Menze, Bay City, Michigan, and is patented in the United States and Canada. It is a snow plow attached to the front of an engine, and is provided with inclined movable slats, whereby the



snow is delivered upon laterally-moving slat platforms, which divert it to each side of the track. The snow plow is adjustable, so as to be raised or lowered to suit high or low snow falls. The forward movement of the plow into the snow causes the action of the movable slat carriers.

The claim, illustrated herewith, reads as follows:

1. The frame-work A A, adjustable by means of the perforations K K, *i i*, and pins or bolts, and screw L, and provided with the wheels or rollers B and C, and the cutter D, all combined, arranged, and operating substantially as described.

2. In a snow plow, the combination of the frame-work A A, provided with the wheels B and C, cutter D, and adjusting screw L, with the slatted endless apron E, rollers F F′, and platform G, all as hereinbefore shown and described.

3. As a snow-removing attachment to a locomotive or railway engine, the combination of the frame-work A A, wheels B C, cutter D, aprons E $G^2$, screw L, and shafts F F′ H H′, constructed as hereinbefore set forth.

4. In a snow plow, the combination of the frame-work A, provided with wheels B C, cutter-edge D, side walls E′, central wall $E^2$, with the inclined apron E, curved rear wall $G^3$, and the lateral delivery aprons or carriers $G^2$, all as shown and described.

5. In a snow plow, the combination of the frame-work A A, inclined carrier E, rollers F F′, curved rear wall $G^3$, delivering aprons $G^2$, and rollers H H′, all as hereinbefore described.

Mr. Menze invites correspondence from persons interested in introducing a snow plow.

### Another New Sleeping Car.

AN improvement in sleeping cars has recently been made and patented, both in this country and Canada, by Dr. S. S. Black, at present of Los Angeles, California.

The inventor seeing the need of greater accommodation on night trains, and the distress a large portion of the traveling public endure when compelled to journey by night, set himself to work to provide a means by which every traveler on a railroad train can secure a comfortable night's rest. This has certainly long been a desideratum.

A proper thing for railroad companies to do, would be to provide means for all their patrons to be comfortable at night, just as any steamboat company is supposed to do. Dr. Black's invention provides a method whereby this requirement can be fulfilled without the expenditure of any considerable amount of money. It is applicable to any first class car by reseating the same, and costs from seven to ten dollars per seat more than the ordinary first class car seat.

The following is a description of this improvement: Each seat is of the usual height, length and breadth, and distance from the adjoining one. The back is an inch or two higher than the average back, which adds much to its comfortableness, and is upholstered with what is known as a spring-edge cushion, in the same fashion as the seat cushions. Five seats may be called a section, and this section is made up into three sleeping berths, two lower and one upper, the latter being only about three feet from the floor. The upper one is formed from the backs of the three central seats of the section. The center one is turned up until it is horizontal, where it locks automatically. It is hung between the knocker bars on axes, and secured by lock bolts. These are withdrawn and the back rotated on its axis, bringing the soft or cushioned side upward. The two adjoining backs are thus operated in the same way, but are made to incline toward and rest against the central one, thus forming a berth six feet four inches long. A bolster or head cushion is kept under the cushion of the central seat for this top berth. The foot of each lower berth is under the middle of the upper berth, where they are separated by a small panel. The seats, except the central one of the five, are provided with under cushions hinged to the upper ones, which are the broader.

The upper one is lifted by a lug and drawn forward, and made to fill the gap between the seats, where it is securely held. The head cushion is slightly inclined upward, making a comfortable lounge. Roller curtains are dropped from the top of the car to the ends of the top berth, and between the heads of the lower berths if desirable. No step ladder is needed.

Of course passengers would not expect to disrobe entirely, in this car, but they could stretch themselves to their full length and rest, as each bed is a little over six feet long, and perfectly comfortable, the upper part of the car being open and free for the circulation of air.

The great advantages of this car are, that it has little or no extra weight; little extra cost (from three to five hundred dollars per car) above an ordinary passenger coach; it is not top-heavy; has full seating capacity for day travel and as large sleeping accommodation as is likely ever to be called for. Six can sleep where ten, if every available seat were taken, could sit; but as a matter of fact the proportion of night travel is never greater than this. In leaving large towns in the evening, trains are usually overfull, but by bedtime a large portion have stopped off, so that the remainder would seldom be too great to be accommodated, each with a chance to lie down if so desired, and if any two of a party of six wish to sit up, they can do so without depriving the other four of rest.

This car would be especially useful to branch roads, and others which are not already supplied with the ordinary sleepers.

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THE Old Colony Railroad is seeking leave from the Massachusetts legislature to double track its road.

### Improvement in Hand Cars.

THE Kalamazoo Hand Car, although recently patented, has been thoroughly tested by competent railroad men for six months, and is very favorably regarded by them.

The peculiar construction of the cranks of the car, these being set obliquely to each other, does away with dead centers, and perfectly economizes the power used. The trussed levers passing each other to their pivots, apply their power to both sides of the spur gear, thereby securing additional leverage believed to be unattainable in a hand car otherwise constructed. The gas-pipe frame or standard, is light, strong and durable, and occupies but little space. An S-shaped brake works on both wheels at the same time. It is very strong, and is instantaneously operated by simply stepping on the pedal.

THE KALAMAZOO HAND CAR.

For further particulars address the Kalamazoo Railroad Velocipede Company, Kalamazoo, Michigan; or Alfred Heyn, agent for New York city.

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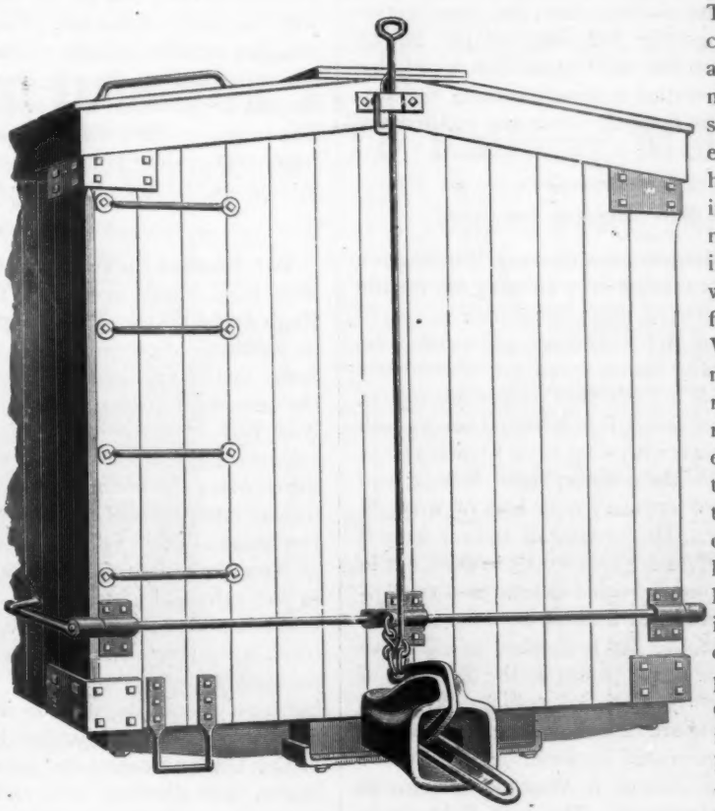
THE stockholders of the Schuylkill Navigation Company, which is controlled by the Philadelphia and Reading, held their annual meeting February 12. The annual report shows that the balance to the credit of the general income account at the beginning of the past year was $91,305. The income for the year was $639,976, of which $635,776 was rent payable by the Philadelphia and Reading Railroad, and $4,199 interest and discount received. The interest paid on loans, dividends, State tax, discount on loans sold, and office expenses amounted to $644,355, leaving a balance to the credit of the general income on January 1, 1884, of $86,926.

### The Union Car Coupler.

OUR illustration shows the car coupler invented by Pierre E. Mignault and Peter Dion, and manufactured by the Union Car Coupler Company, No. 19 Congress street, Boston. It has a special claim to notice in that it is now in use, having been adopted by the Eastern Railroad Company after several months of severe and constant service, and is giving entire satisfaction. The superintendent of the Eastern Railroad Car Shops says "it has never once missed making a connection under any circumstances." As by its means, a train can be made up in half the usual time, both time and engine power are saved very considerably by its introduction.

The Union Coupler is inexpensive because simple in its mechanism. It is automatic, and can be uncoupled from either the side or the top of the car, thus insuring absolute safety to all employés. It is compact, very strong, not liable to get out of order, uses no springs or pins, has no parts to become lost, and works perfectly in connection with the coupler now in common use on all freight cars. Full particulars may be had at the office of the manufacturers, where the coupler may be seen, and its operation is shown.



THE UNION CAR COUPLER.

### Carpenter's Boring Machine.

THIS machine is a new departure in all its arrangements, and is believed to be quite an improvement over every other kind. Instead of the old wooden upright frame, it is built of steel, with steel braces. The upright rods (one-half inch in diameter) pass through the auger gate, which slides up and down on them, and can by no possibility fly the track. By the half turn of a set-screw the frame can be adjusted so that the auger will bore at any desired angle. When the right depth is reached, the auger comes to a full stop; the next turn in the same direction loosens the screw; then it falls into gear, and is drawn out of the hole without changing the motion. When the gate is drawn up it catches on a pin and is firmly held, but when drawn a little higher it leaves the pin and descends to its work. The machine goes through all these paces without the operator taking his hand off the cranks. The cranks may be lengthened or shortened at pleasure, so as to give any desired speed. This machine works very fast and is exceedingly durable. The gears are cut, which is not usual in other machines.

This machine is manufactured by the Millers Falls Company, Millers Falls, Massachusetts; New York office, No. 74 Chambers street.

### Harbold's Car Coupling.

THE object of Harbold's Car Coupling is to couple cars of varying heights, and in such a manner that the brakeman cannot be hurt. A movable bar of iron extends across the car beneath the draw-head, terminating at each end with a handle, and fastened to the car by journals on either side. Immediately beneath the draw-head and extending to the end of the same, and fastened to this bar, are two stationary arms. The ends of these arms contain a hole or journal, and through these journals two movable bars slide back and forth, and extend beyond the draw-head from six to eight inches. These are connected by a flat piece of iron, which extends upward to a level with the floor of the draw-head. When the coupling is not in use it hangs beneath the car, and the movable bars are thus extended. When in use, the brakeman stands at the side of the car, out of danger, and by the handles raises the coupling. The flat piece of iron, or link-guide, catches the link of the approaching car; then the coupling is raised until it is stopped by the draw-head underneath, to which it is attached. This brings the link on a level with the car to be coupled. The approaching car pushes back the movable arms, and the link-guide sustains the link in the proper level, and in this manner is guided to the draw-head. When the cars move, the coupling drops to its place beneath the cars.

The patentee of this invention is John E. L. Harbold, Worthington, Jefferson county, Kentucky.

THE Railway Specialty Manufacturing Company, No. 30 Vesey street, New York, is now fully organized, with capital partly paid up; and is in position to take orders for Horner's Safety Switch Stand, described in these columns last month. Arrangements made by the company provide for the manufacture of the stand by other companies, on royalty. The device is already in use on some of the principal lines, and gives entire satisfaction.

THE "New Inventions" department of this journal, a great success, will be better than ever next month.

### The Fisher Freight Car Door Lock.

J. HYDE FISHER, No. 50 State street, Chicago, is inventor of the railroad freight car door locks described below.

These locks are rights and lefts, to suit different roads. Those in which the button turns to the right against the door when shut, are called right-hand locks; those to the left are left-hand; they are made with or without extra locks. Those without locks have no hook attached to the button, and are cheaper. Those that have locks have a strong three-tumbler bolt lock, which bolts into a hook on the button. The tumblers and lock-bolt are of brass, the latter being in a position which is not liable to get out of gear by rough usage. There is an inside escutcheon for key-hole, which prevents cinders, snow, etc., from entering the lock. Openings the full width of the button allow room for seal, also for the United States lock for bonded goods. The operation is merely turning the button one way to fasten the door, the other way to allow the door to be opened.

### A Superb New Sleeping Car.

THE Harlan and Hollingsworth Company, Wilmington, Delaware, have recently completed a sleeping car for the government of the Argentine Republic, which is one of the finest structures of the kind ever produced. Its frame-work is of iron with channel and eye beams cross blocked with iron tubes; its platform frames are also of iron. Running gear consists of four-wheeled trucks with thirty-six inch Page wheels with steel tires, French's elliptic and coil springs, and the ordinary hand brakes; and the American system of ordinary draw bars of wrought iron is used in coupling. The exterior of the car body is painted in maroon, artistically ornamented in gold cut in with green, black, carmine and other colors; and the lettering is exceedingly beautiful and harmonious with the embellishments. Inside, the car is finished in solid San Domingo mahogany, the raised panels of the old style, of about the sixteenth century. The oak ceilings have solid mahogany mouldings and are ornamented in gold bronze and colors. Light is provided by means of five double light chandeliers of the Adams & Westlake patent, in which olive oil will be consumed. The deck lights have pivoted sash filled with embossed glass and are protected by brass wire cinder screens. Windows have double mahogany sash with plate glass, and are fitted with spring roller curtains. Between them are beveled plate mirrors with plated mirror guards at the base. All metallic trimmings are plated in nickel. The hard wood floors, of maple and cherry, are covered with Wilton carpets of late designs. Throughout the car the seat cushions and backs are upholstered in the finest quality of cherry plush. Heat will be furnished by two small Spear wood burning stoves, one at each end of the car, protected by screens of galvanized iron.

The car is divided into four compartments. One end is occupied by the men's wash room, supplied with a marble-top lavatory, water tank with nickel-plated pump, French plate mirrors and a toilet room. The men's sleeping compartment contains six sections of double berths. Seat ends are of a new and unique design. The upper berths are elaborately finished, the center being a fillet of solid San Domingo mahogany veneer, with a fillet of marqueterie in each end, consisting of a black ground inlaid with brass, white holly and sprigs of laurel. Bulkheads are richly carved, as well as the upper berth rails and dead lights. All the bulkhead doors turn on Union hinges, which allow them to swing either way, and they each contain a panel of richly embossed plate glass. The ladies' compartment contains four sections of the same general style as the men's compartment. Panels in the ventilator sides are inlaid with marqueterie of bunches of pansies with brass borders. The berth curtains are of a rich and heavy material of a dark maroon color, richly embroidered. Mahogany card tables are supplied for each section. The beds are furnished with mattresses, mattress springs, blankets, pillows and all the necessary bed linen marked with the name of the car. Each seat has an upholstered arm rest next the outside of the car and has a pillow box beneath. Ladies' dressing rooms, occupying one end of the car, are provided with lavatory and toilet apartments. The lavatories have marble tops and are supplied by water from a convenient tank by means of a hand pump. Adjoining are the linen locker and other conveniences.

THE Homans Publishing Company, No. 251 Broadway, New York, issued recently "The Banker's Almanac and Register for 1884." This volume (the thirty-fourth year of publication) contains full lists of the National banks, State banks and private bankers of the United States, the president, cashier, and capital of each bank, and the New York correspondents of all; alphabetical lists of cashiers and assistant cashiers in the United States and Territories; the savings banks, trust companies, and safe deposit companies of the United States; the directors of the banks of New York city; the principal stockbrokers of New York city; the banks and bankers of Canada and of the principal cities of Europe, Mexico, Central and South America, the East and West Indies and other countries; a summary of the interest laws, the laws of grace on sight bills, the statutes of Limitation, legal holidays, insolvency, and assignments in each of the States; the number of banks and bankers in each State and Territory of the United States; the pension agents of the United States, their districts, etc.; various statistical tables, and a calendar and timing table for the year 1884. Mr. Benjamin Homans is editor of this invaluable compend of information, which is an indispensable work of reference in many places of business.

AN ingenious advertisement has been issued by the Studebaker Bros. Manufacturing Company, South Bend, Indiana, in the shape of its version of the well-known song, "Wait for the Wagon." It contains words, music for the singer, and an accompaniment for the pianoforte, in a four-paged sheet the first and last pages of which are printed in colors; and includes pictures of the Studebaker Brothers, and a joyful party occupying a Studebaker wagon, making something less than a 2.20 speed over a snow-covered road in a pleasant landscape.

THE Philadelphia city councils, in joint convention, have elected J. Bayard Henry, Edwin A. Gaskill, and Dennis F. Dealy, directors of the Philadelphia and Erie Railroad Company. Elevated railroad schemes in the city named, have received a "set-back."

## BROWN BROTHERS & Co.,

**59 Wall Street, New York,**

BUY AND SELL

## BILLS OF EXCHANGE,

ON GREAT BRITAIN, IRELAND, FRANCE, GERMANY, BELGIUM AND HOLLAND.

**Issue Commercial and Travelers' Credit in Sterling.**

AVAILABLE IN ANY PART OF THE WORLD, AND IN FRANCS IN MARTINIQUE AND GUADALOUPE.

Make TELEGRAPHIC TRANSFERS OF MONEY between this and other countries, through London and Paris.

Make Collection of Drafts drawn abroad on all points in the United States and Canada, and of Drafts drawn in the United States on Foreign Countries.

## ZUCCATO'S PATENT PAPYROGRAPH.

**Especially Adapted for Railroad Use.**

The best and most reliable copying process in use. 1000 copies from each original writing or drawing, and the last as good as the first. No gelatine, no washing or wearing out.

Send for price-list, testimonials and specimen prints.

**S. C. ANDERSON, General Agent,**

93 Duane Street, New York.

## Derby Roll-Top Office Desks.

Write for Descriptive Price List.

It will pay you.

These Desks are celebrated for their perfection of workmanship, finish and **wearing qualities.** They have over **350 first-class** references in N. Y. City alone.

**JOHN M. TUFTS, Jr.,** Sole Agent,

**83 Nassau St., N. Y. City.**

THE UNITED STATES

## Rolling Stock Company,

**GENERAL OFFICES—35 Broadway, N. Y.,**
**WORKS—Chicago, Ill., and Urbana, Ohio,**

Offers for Lease to Railroads, Freight Lines, Mining Companies and others,

## Locomotive Engines and all kinds of Freight Cars

And is also prepared to build for Lease and

**On Contract for Cash, or under the Car Trust System,**

Such Rolling Stock of every description as may be required.

A. HEGEWISCH, Pres't.

## DISEASE CURED
### WITHOUT MEDICINE.

*A Valuable Discovery for supplying Magnetism to the Human System. Electricity and Magnetism utilized as never before for Healing the Sick.*

THE MAGNETON APPLIANCE CO.'S

## MAGNETIC KIDNEY BELT!

FOR MEN, IS

WARRANTED TO CURE,

**or Money Refunded,** the following diseases without medicine:—PAIN IN THE BACK, HIPS, HEAD OR LIMBS, NERVOUS DEBILITY, LUMBAGO, GENERAL DEBILITY, RHEUMATISM, PARALYSIS, NEURALGIA, SCIATICA, DISEASES OF THE KIDNEYS, SPINAL DISEASES, TORPID LIVER, GOUT, ASTHMA, HEART DISEASE, DYSPEPSIA, CONSTIPATION, ERYSIPELAS, INDIGESTION, HERNIA or RUPTURE, CATARRH, PILES, EPILEPSY, DUMB AGUE, etc.

## To Railway Men, Miners,

AND SEAFARING MEN,

CONDUCTORS, ENGINEERS,

and others subject to the constant jar of the cars, who find themselves becoming nervous, with weakness of the kidneys, etc.; travelers and others exposed to sudden changes of temperature and climates, and who are liable to coughs, colds, lung complaints, rheumatism, malaria, and contagious diseases, will not only find our Magnetic Belt a CURATIVE but also preventive of these ills. They keep the blood pure, rich, and healthful, by giving it iron, magnetism and electricity—which are the life of it, as well as imparting tone and vigor to the nerves and strength and hardness to the muscles—thus keeping the system in its normal, healthful condition.

### *READ THE EVIDENCE.*

CHICAGO, ILL., Nov. 7, 1883.

*Magneton Appliance Co., Chicago, Ill.:*

GENTLEMEN:—I am prompted to make this public acknowledgment of the wonderful merits and curative properties of your Magnetic Belts, from the great relief and benefit obtained by using one for the past year. If any class of people suffer from kidney disease it is railroad engineers, occasioned by the continual jar of the engine. I have suffered many years with Kidney and Liver disease, Rheumatism, and great exhaustion and nervousness. Now I feel like a new man, so great is the change in my health. I doctored with some of the best physicians during those years, who dosed and drugged but did not cure me; but I am free to state that your Magnetic Belt is the best and cheapest curative agent in America. I feel like a new being in every respect, and I shall use my influence in behalf of your admirable Appliances. I wish every railroad engineer in America that is troubled as I have been, would try your belt.

Yours truly, H. L. SEAVER,
*Engineer Illinois Central R. R.*

Residence, 1228 Indiana Ave.

CHICAGO, ILL., Jan. 24, 1883.

*To Whom it may concern:*

Up to within four months ago, I have spent upwards of fifteen hundred dollars in trying to cure myself of rheumatism. I have made trips to the Hot Springs and different resorts throughout the country, all of which furnished me no relief. Four years ago I purchased a Belt, Lung Protector and Insoles from the Magneton Appliance Company, and have not had any rheumatism since wearing the appliances, which is the first time in five years I have been free from it.

Yours truly,
J. P. PUTNAM, Conductor I. C. R. R.

P. S.—Mr. Putnam is conductor on the Illinois Central Railroad, which position he has filled the past fifteen years.

We can give thousands upon thousands of names who will endorse the above testimonial.

Price of Belt with Magnetic Insoles, $10, sent by express C. O. D., or by mail on receipt of price.

In ordering send measure of waist, and size of shoe.

Remittance can be made in currency, sent in letter at our risk.

The Magneton Garments are adapted to all ages, are worn over the under clothing (not next to the body like the many Galvanic and Electric Humbugs advertised so extensively), and should be taken off at night. They hold their Power Forever, and are worn at all seasons of the year

Send stamp for the "New Departure in Medical treatment Withou Medicine," with thousands of testimonials.

## The Magneton Appliance Co.,

**218 State Street, Chicago, Ill.**

# NATIONAL TUBE WORKS CO.

Manufacture Wrought Iron Pipes and Tubes.

National Special Semi-Steel LOCOMOTIVE Tubes.

WORKS: McKEESPORT, PENN.; BOSTON, MASS.

**OFFICES:**

104 and 106 John St., New York; 8 Pemberton Square, Boston; 159 Lake St., Chicago.

## BREWSTER & CO. (of Broome-st.)

# CARRIAGES AND ROAD WAGONS.

**THE LEADING HOUSE IN AMERICA.**

Vehicles for Town and Country, for Gentlemen's and Ladies' own driving.

Together with Every Description of Sporting Trap.

**Rubber Cushioned Axles used exclusively.**

## BROADWAY, 47th to 48th Street, N. Y.

(ONLY PLACE OF BUSINESS).

NOTE.—We have no connection with a Stock Company advertising itself as the "Old House."

# The Salmon Car Heater.

"36 per cent. of coal saved, and the car kept noticeably warmer!" by using

The Salmon Car Heater.

It insures Safety from Fire in case of accident, Economy in Fuel, and

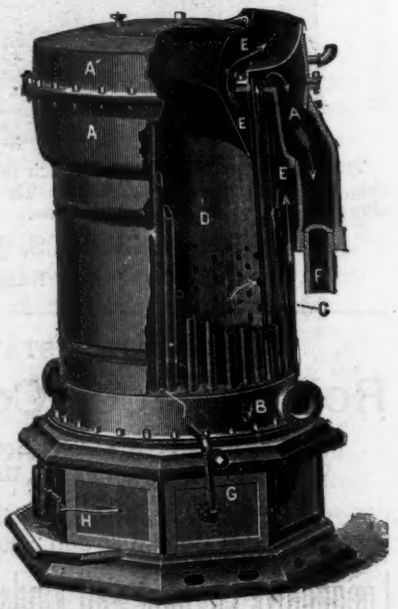
RAPID CIRCULATION.

It heats quickly, is SELF-REGULATING, and can be used for either

STEAM OR HOT WATER.

**The Water Tubes do not come in contact with the Coals,** but occupy the Smoke Flue in such a manner as to absorb the greatest amount of heat from Coal in a **low state of combustion,** without danger of chilling the fire.

At the last "Mechanics' Fair" it received the Silver Medal, being the highest award to heaters of any kind.




CORRESPONDENCE SOLICITED.

## THE SALMON CAR HEATER COMPANY.

**OFFICE, 48 CONGRESS STREET, BOSTON, MASS.**

# Forbes Lithograph Mfg. Co.,

**181 Devonshire St., Boston.**

PRINTING BY ALL KNOWN METHODS

Show Cards, Commercial Work, Bonds, Checks, and Label Work of every description.

THE ALBERTYPE PROCESS

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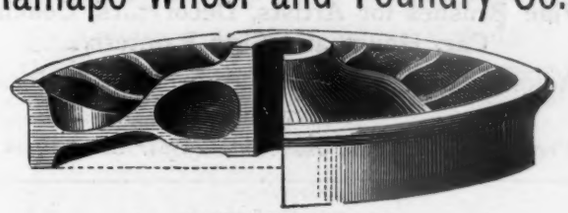

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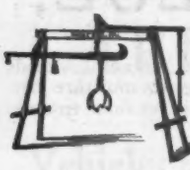

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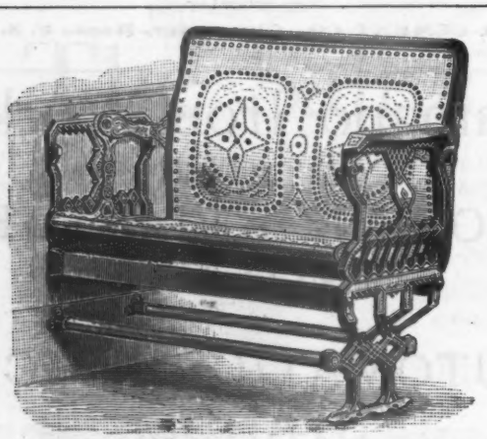

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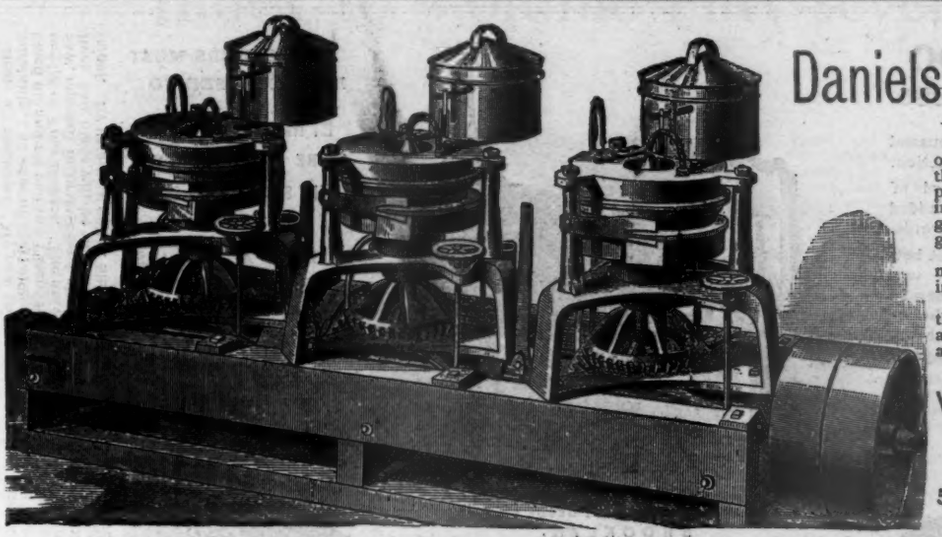

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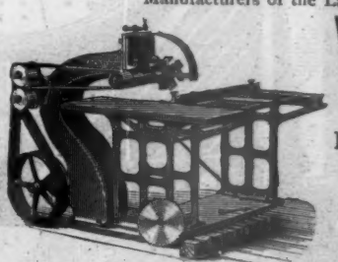

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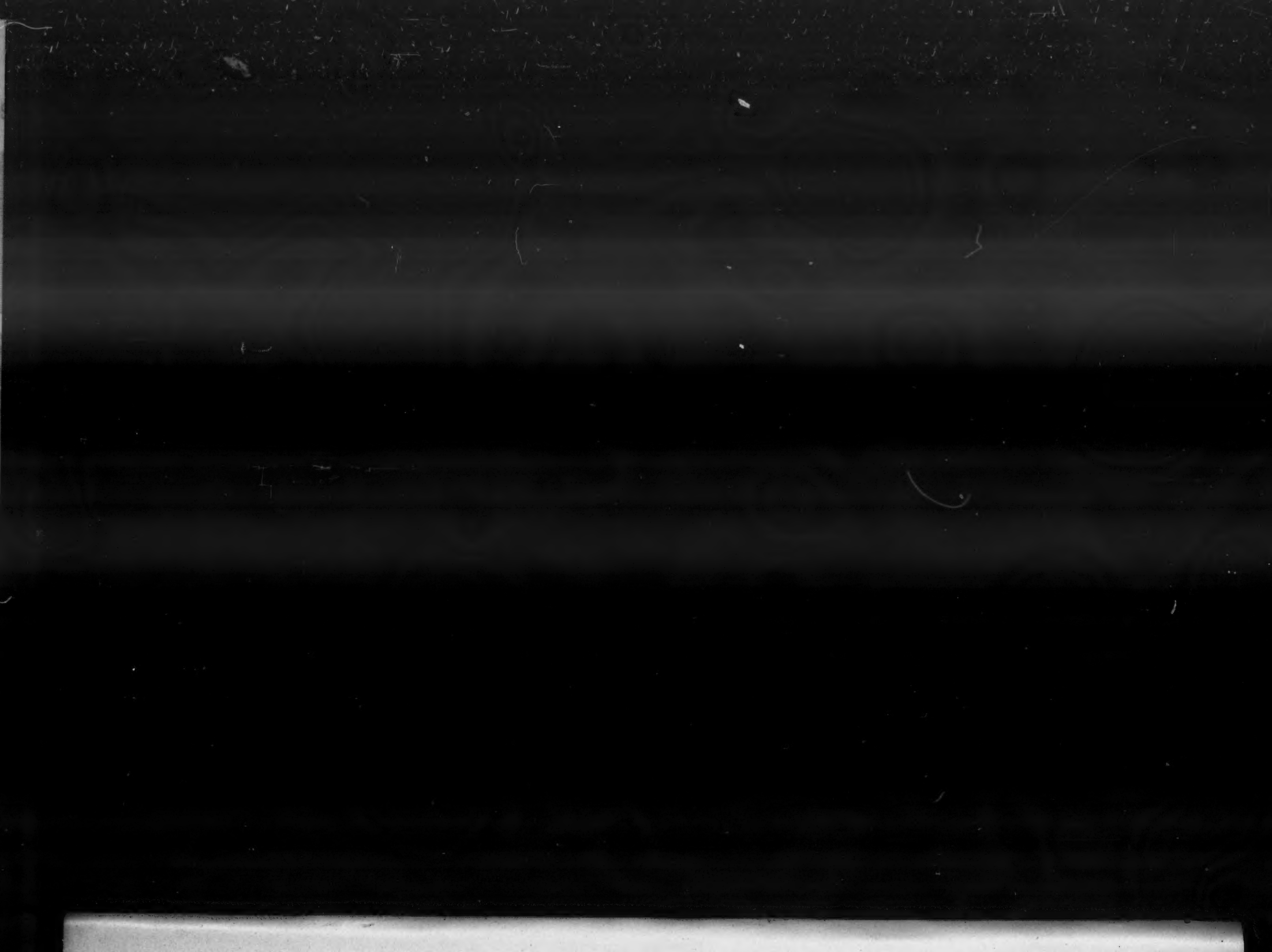

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# AMERICAN RAILROAD JOURNAL.

VOLUME LVI NUMBER 1.

New York, January 6, 1883.

PUBLISHED WEEKLY BY THE

AMERICAN RAILROAD JOURNAL CO.

AT

No. 2[illegible] PEARL STREET.

The AMERICAN RAILROAD JOURNAL, the oldest railroad paper in the world, was established during the construction of the first 100 miles of railroad in this country. Its files of the past 50 years furnish a complete record of the development of American railroads and faithful chronicles of the kindred financial interests. It contains features of special value to investors and others desirous of being readily acquainted with value and transactions connected with the development and working of our railroad systems, and much of interest to the general reader. It is taken by leading railroad men, investors and banking houses in this country and Europe, where it has long been a recognized authority in its special field.

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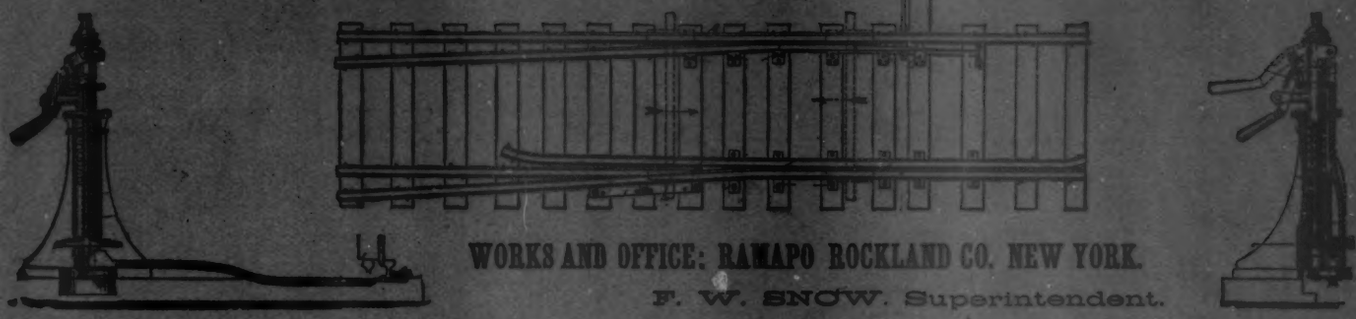

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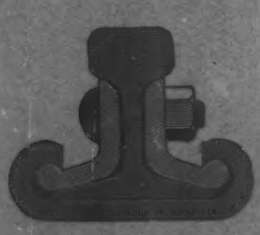

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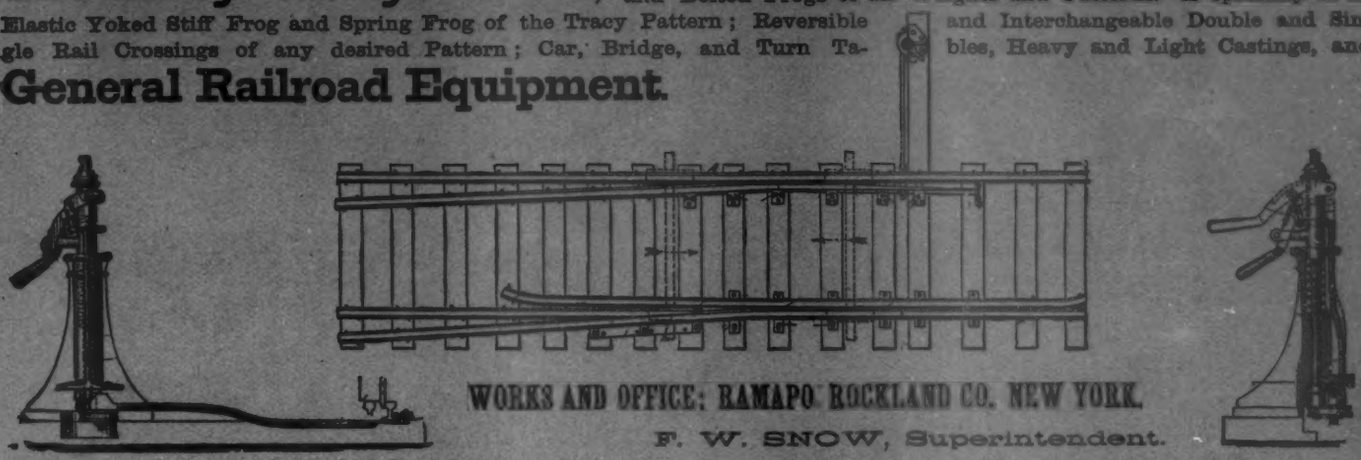

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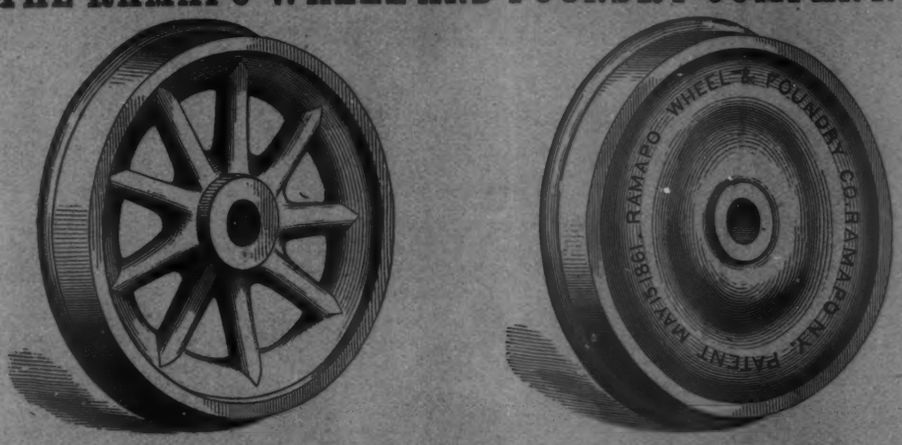


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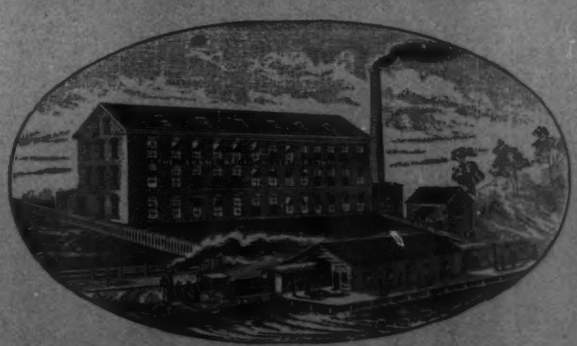

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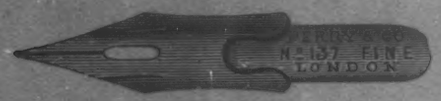


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VOLUME LVI. NUMBER 3.

New York, January 20, 1883.

PUBLISHED WEEKLY BY THE

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AT

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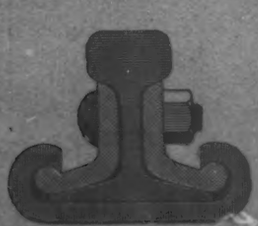

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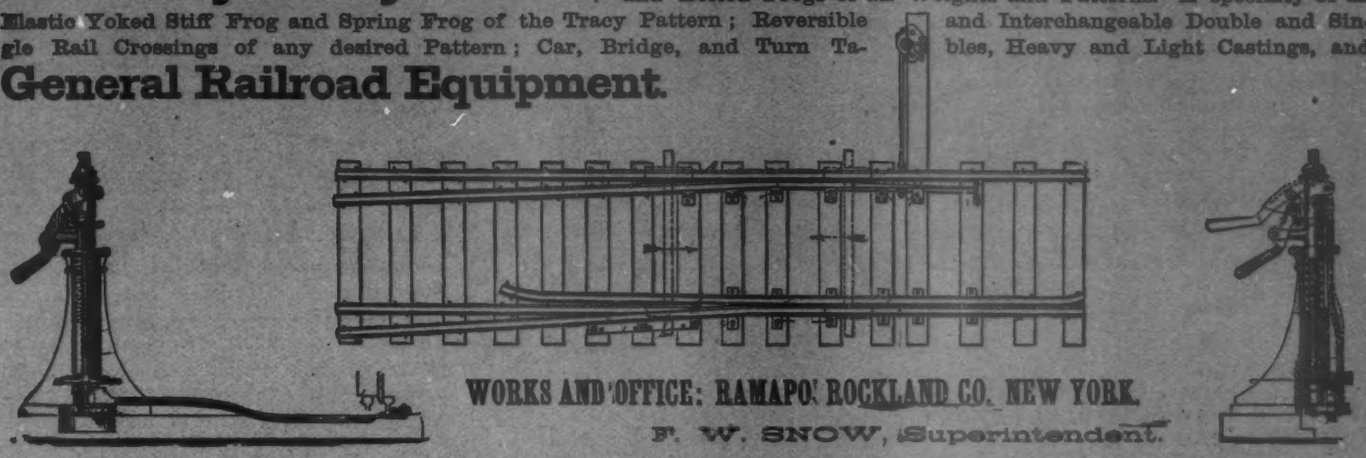

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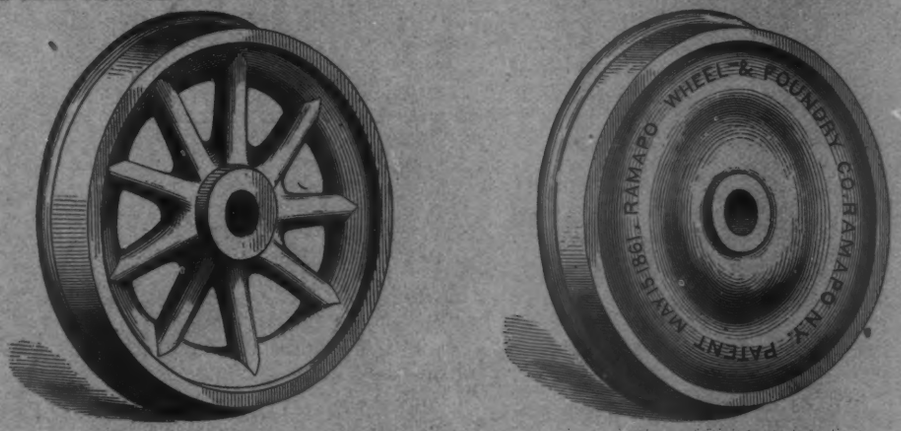


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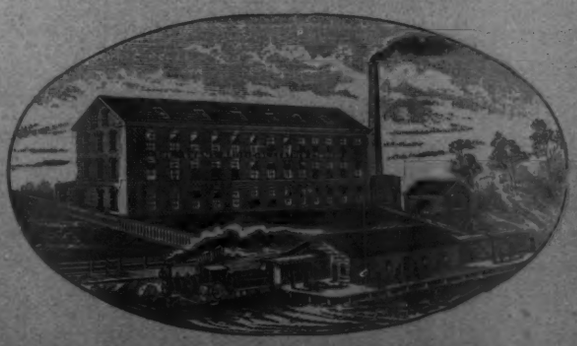

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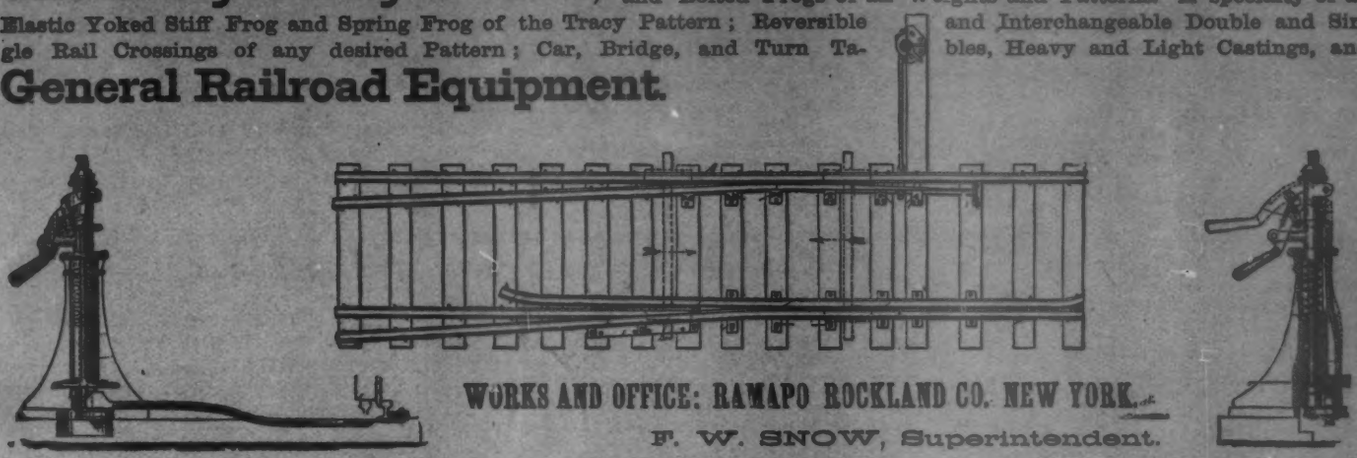

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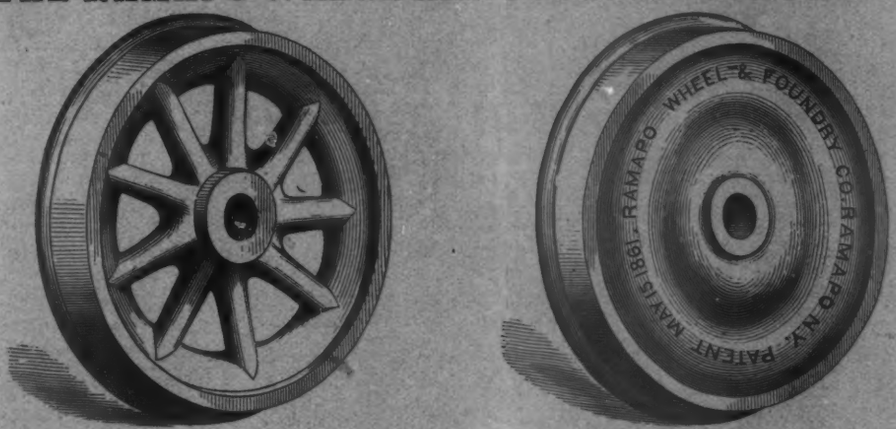


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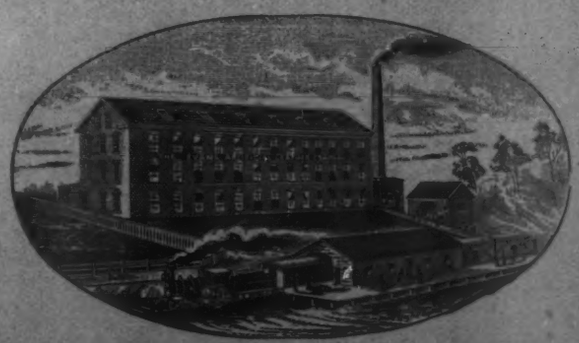

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PUBLISHED WEEKLY BY THE

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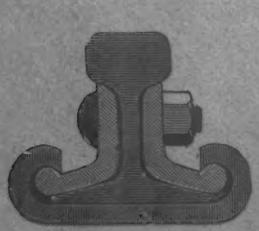

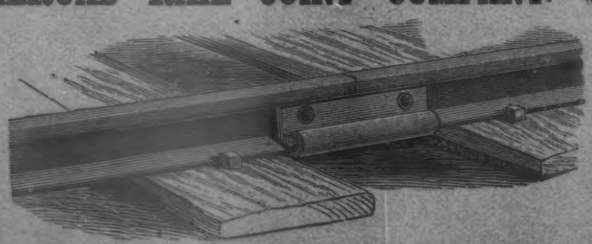

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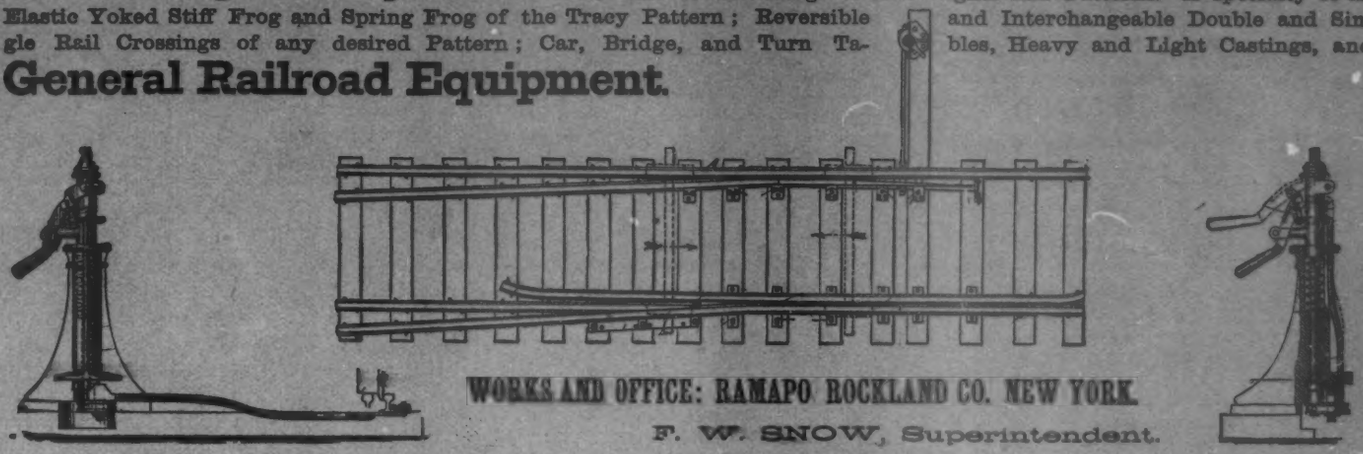

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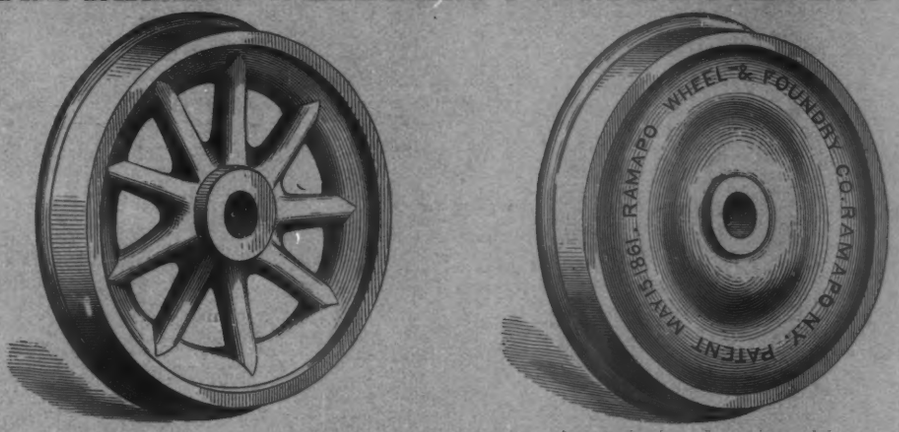


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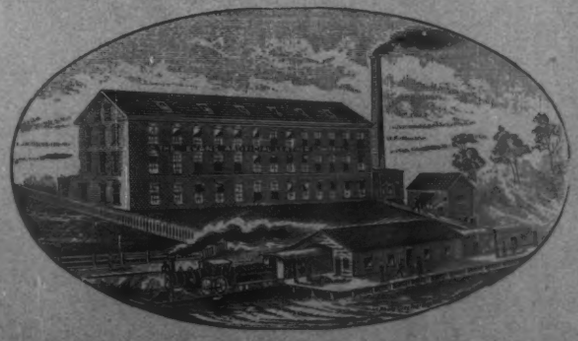

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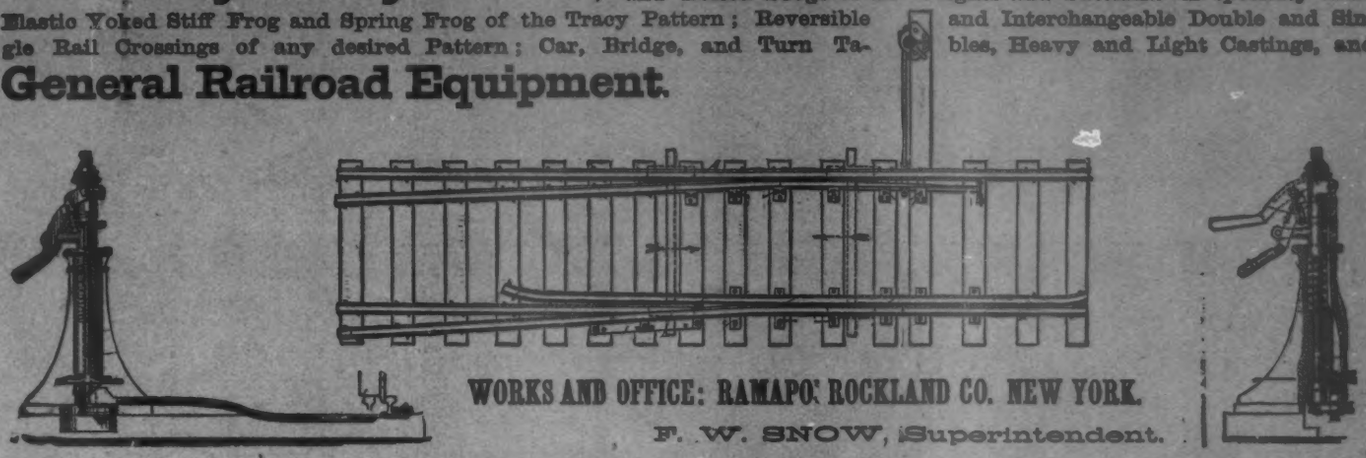

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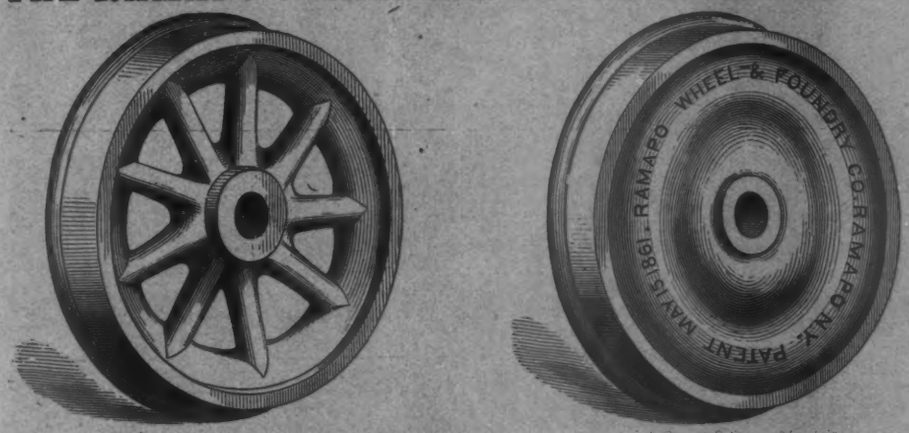


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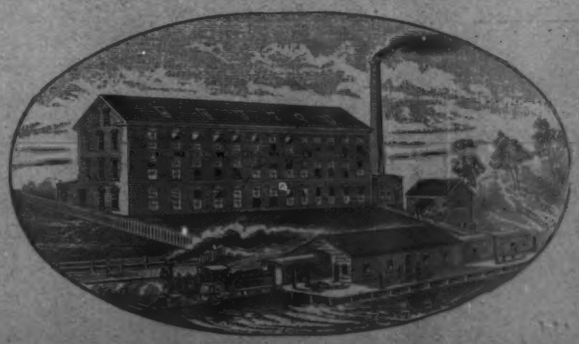

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VOLUME LVI. NUMBER 7.

New York, Feburary 17 1883.

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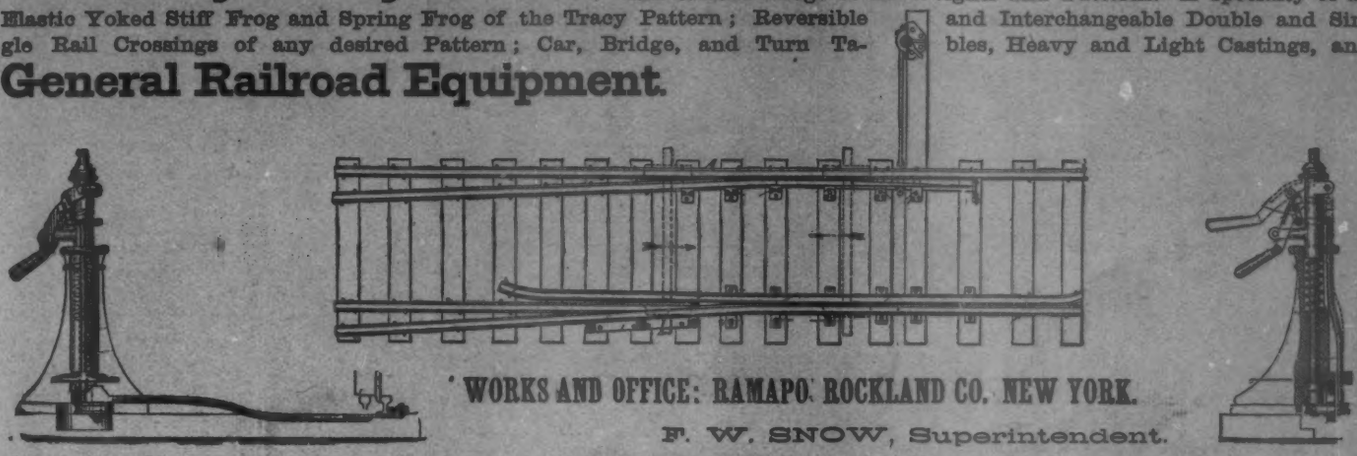

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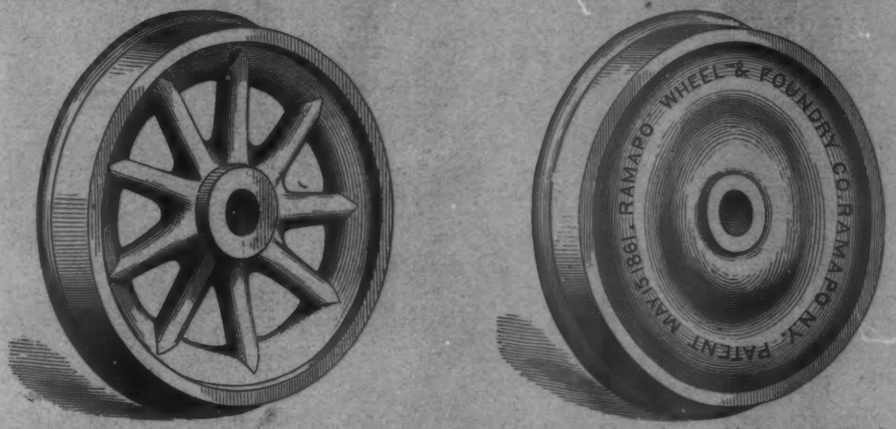


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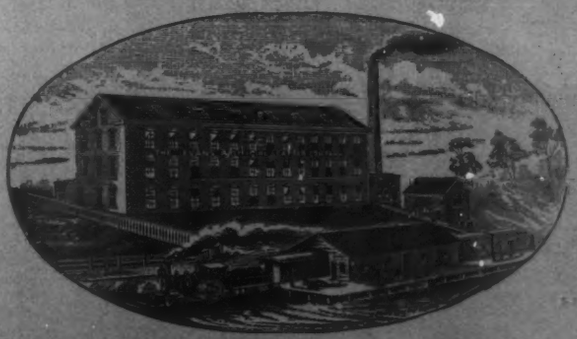

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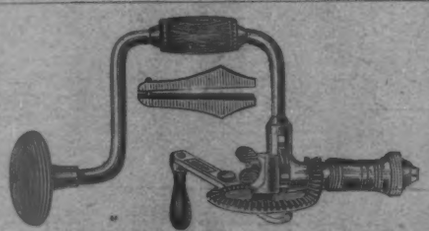

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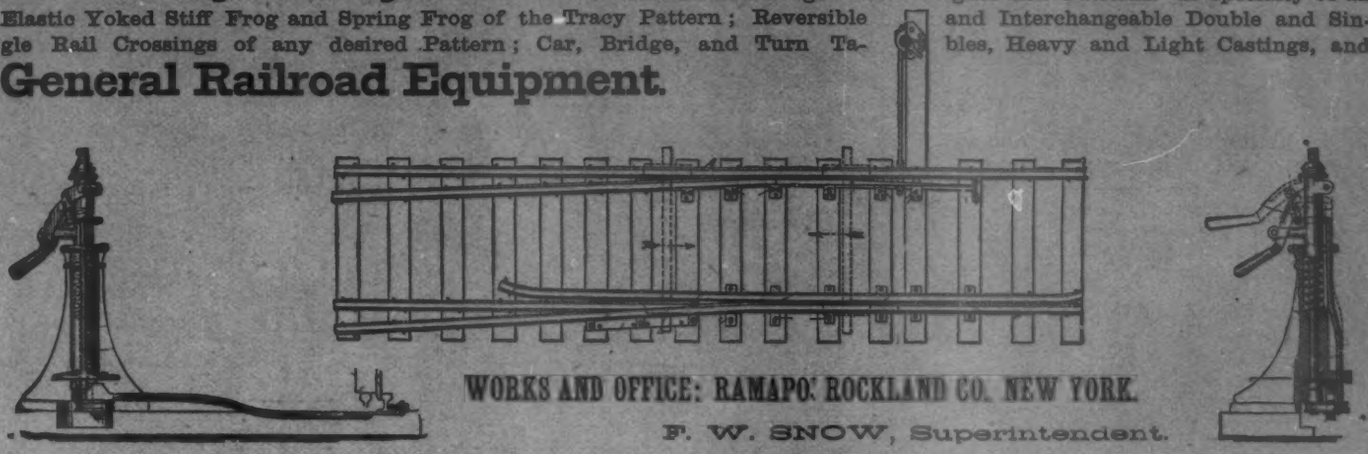

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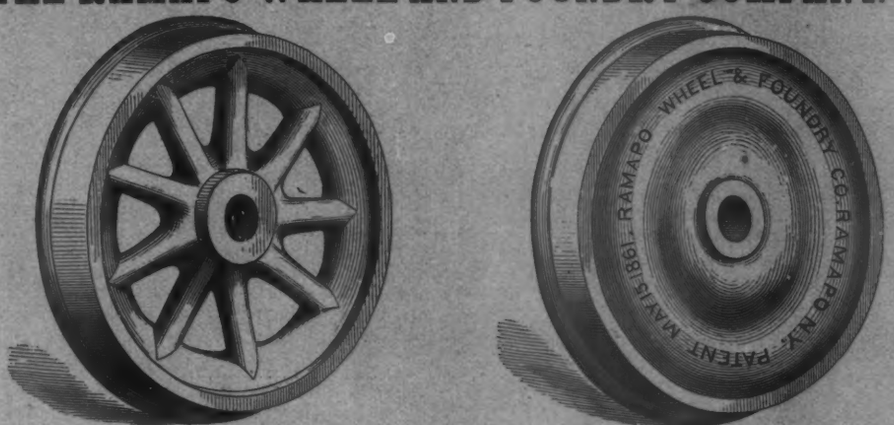


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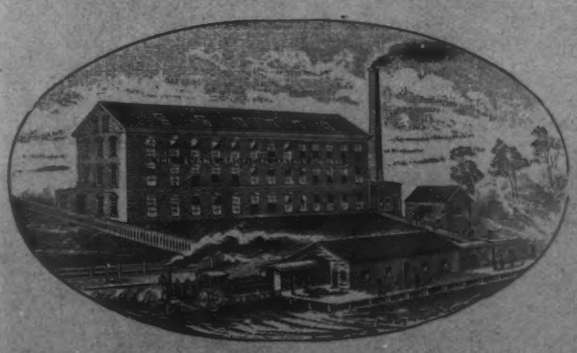

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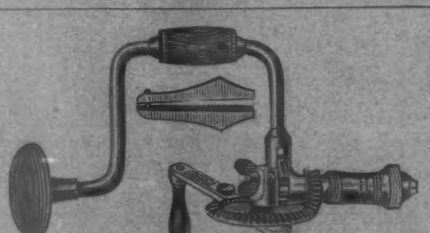

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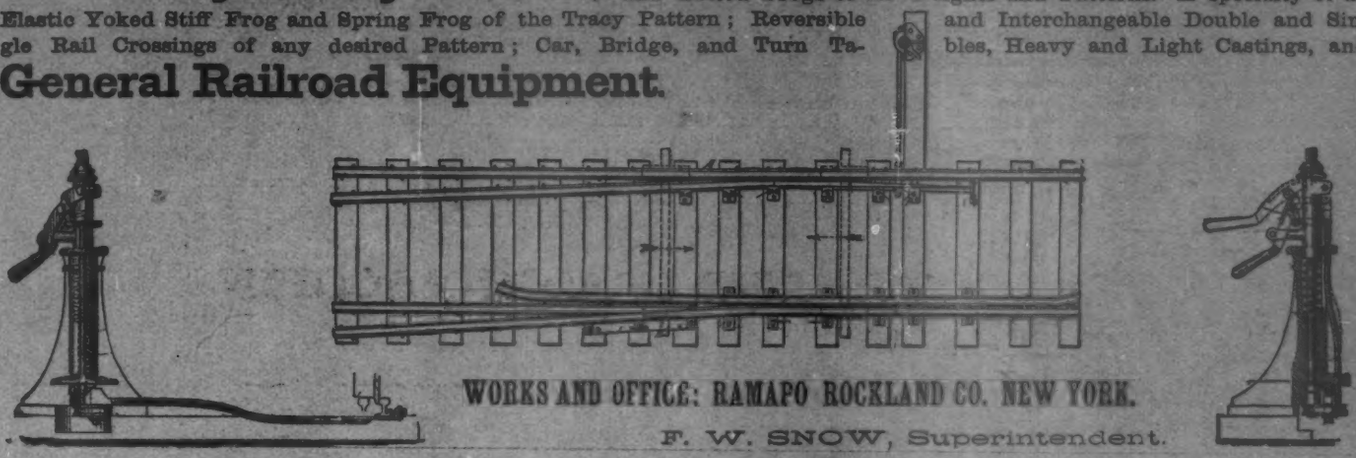

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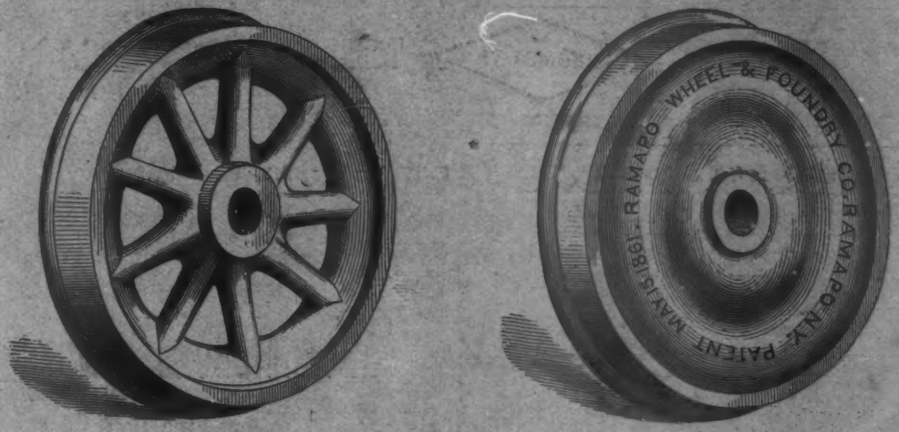


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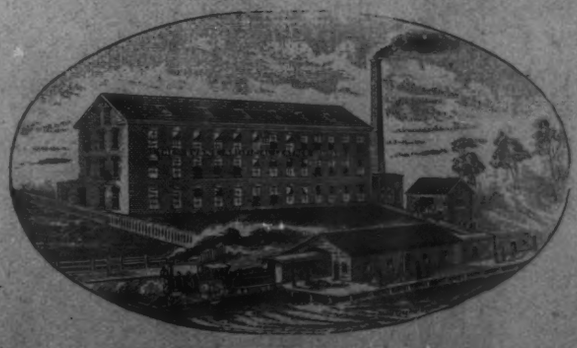

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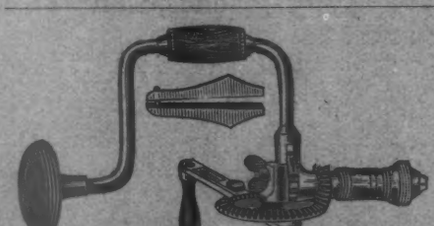

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VOLUME LVI. NUMBER 10.

New York, March 10, 1883.

Railroads.
Machinery.
Manufactures.
Steam Navigation.
Street Railroads.
New Inventions.
Commerce.
Finance.
Mining.

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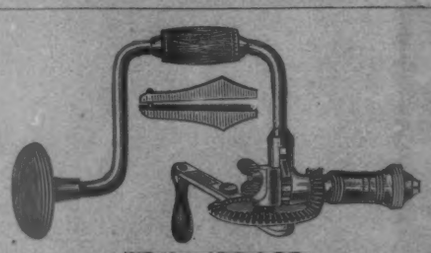

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VOLUME LVI. NUMBER 11.

New York, March 17, 1883.

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Steam Navigation.
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New Inventions.
Commerce.
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Mining.

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VOLUME LVI NUMBER 12.

New York, March 24, 1883.

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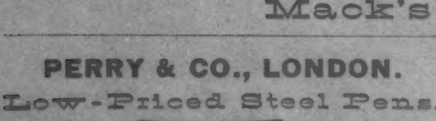


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VOLUME LVI. NUMBER 13.

New York, March 31, 1883.

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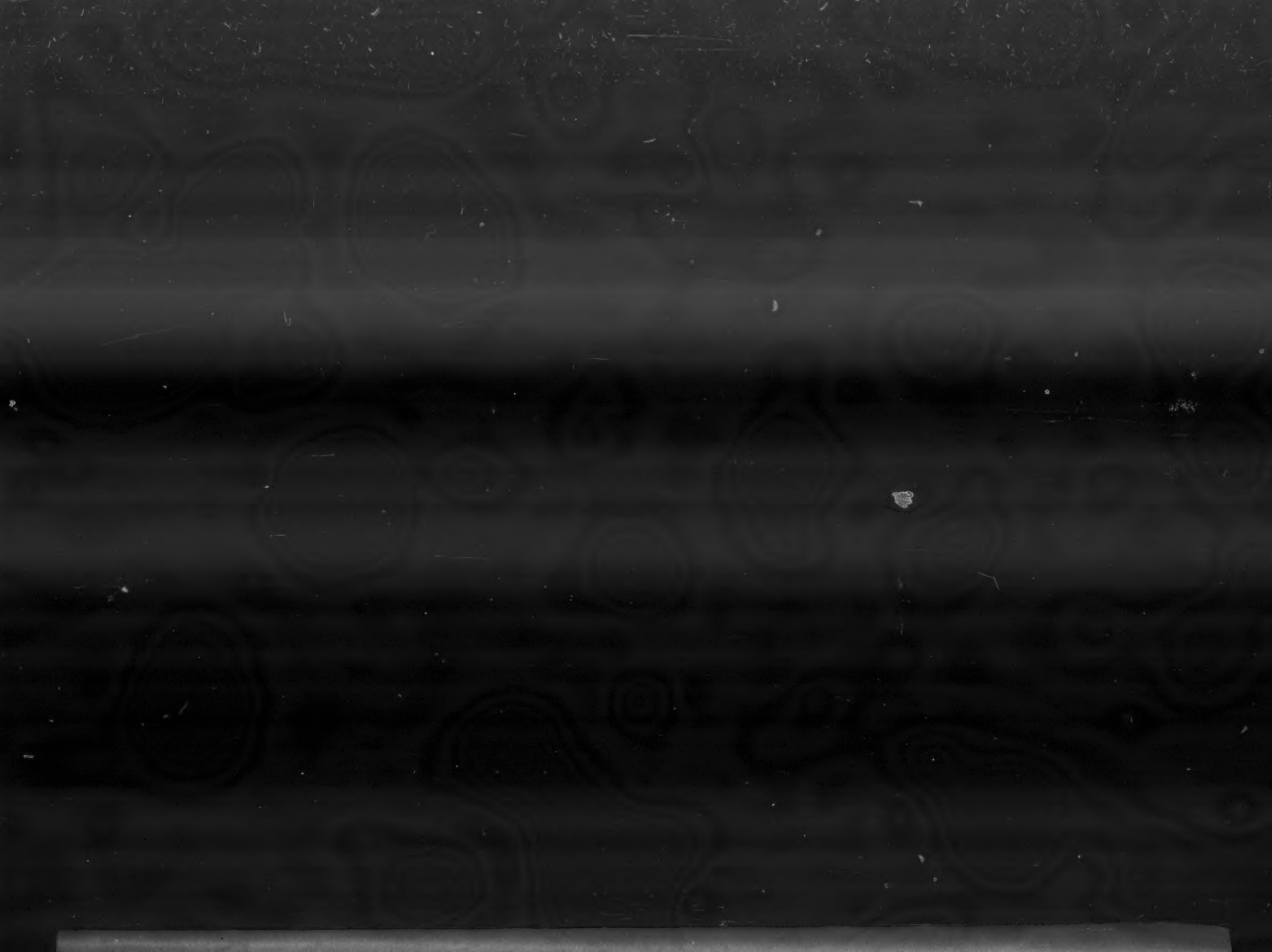

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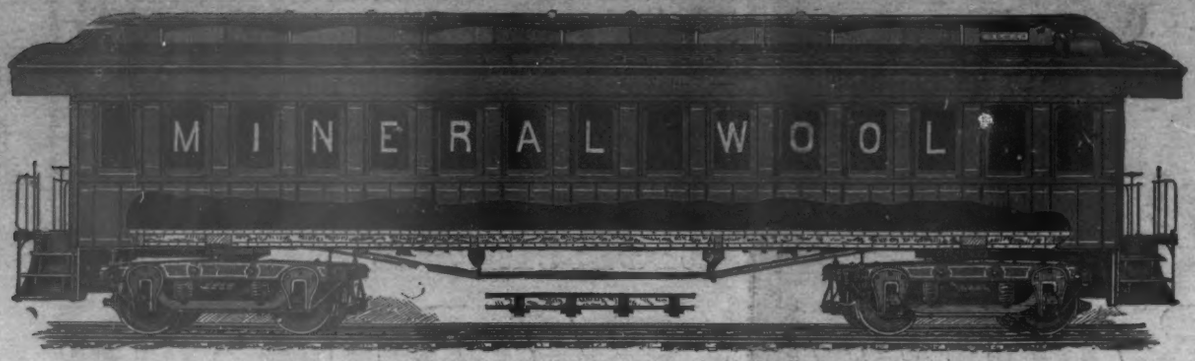


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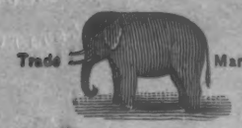


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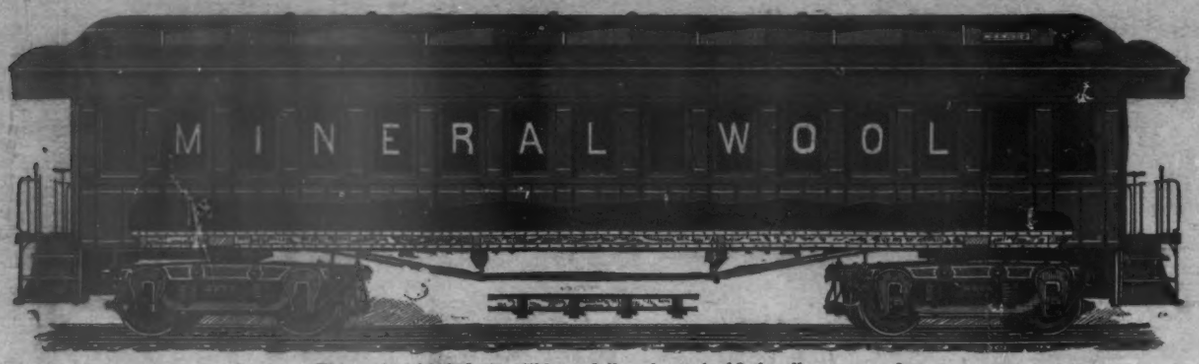


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METAL BODIED RUBBER TYPE.

BAGGAGE CHECKS.

VOL. 57 ESTABLISHED 1831. NO. 3

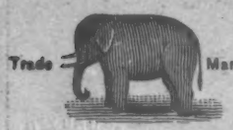
# THE AMERICAN RAILROAD JOURNAL

JUNE, 1883.

NEW-YORK
THE PHENIX PUBLISHING COMPANY
1883

# The Phosphor-Bronze Smelting Co., Limited

512 ARCH ST., PHILADELPHIA, PA.

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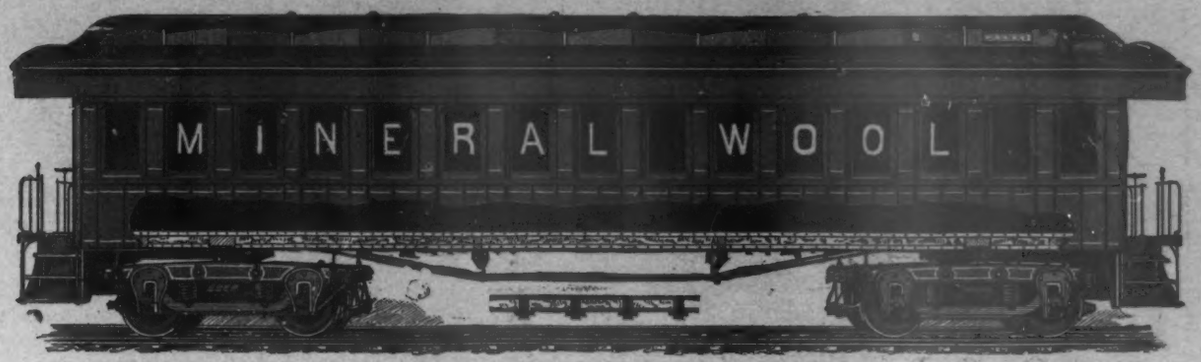


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INCORPORATED 1882.
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VOL. 57 ESTABLISHED 1831. NO. 4

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These ingredients are positively safe to transport and handle, do not freeze in cold climates, exceed in strength the dynamites, and contain no glycerine, nitro-glycerine, or gun cotton. Made by the

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Circulars sent on application.

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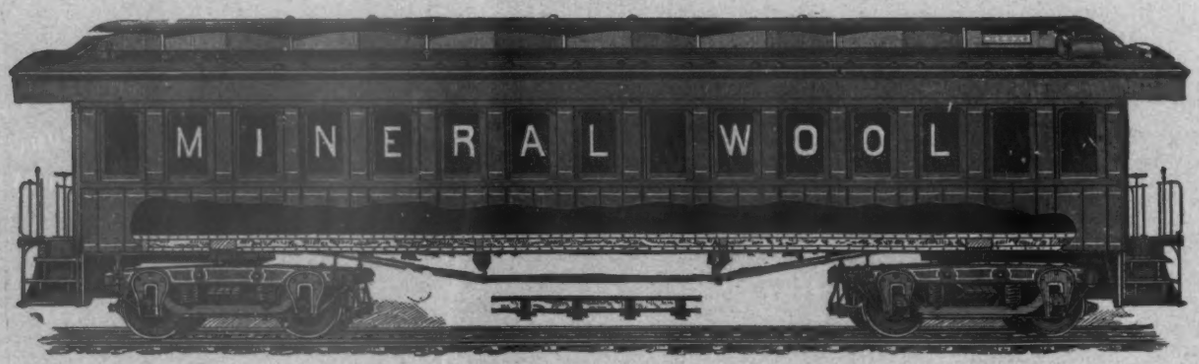


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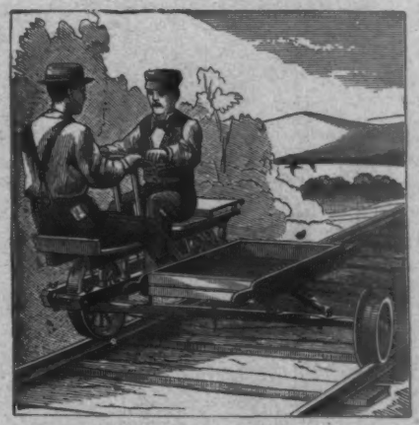

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Vol. 57 No. 5

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AUGUST, 1883.

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245 BROADWAY

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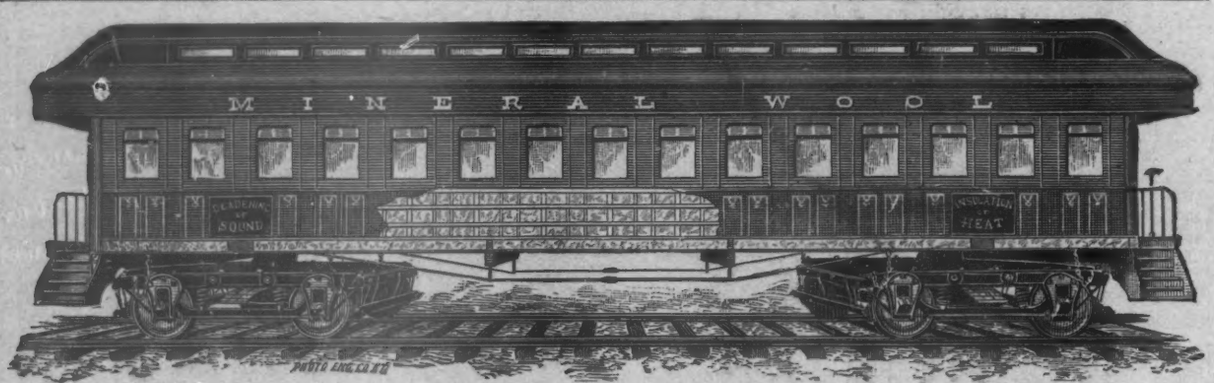


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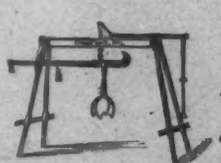

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Vol. 57 No. 6

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SEPTEMBER, 1883.

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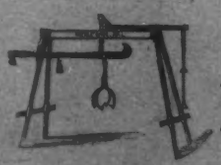

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MAIN OFFICE
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REDMAN & KENNY, N.Y.

ESTABLISHED 1831.

VOL. 57 NO. 8

# THE AMERICAN RAILROAD JOURNAL

NOVEMBER, 1883.

NEW YORK
THE PHENIX PUBLISHING COMPANY
245 BROADWAY

Print of Hub Pub. Co. of N. Y.

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"Phosphor-Bronze."

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For Locomotive and Car Bearings,
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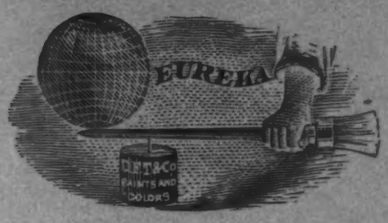


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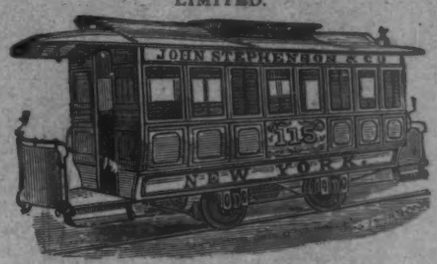


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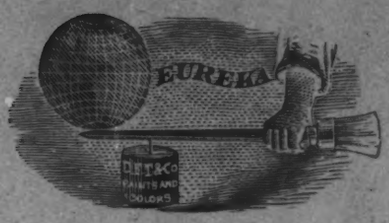


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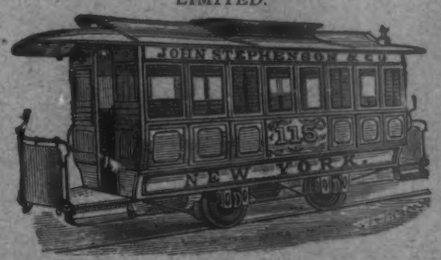


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VOL. 57 — NO. 10

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JANUARY, 1884.

NEW YORK
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284 PEARL STREET.

Print of "The Hub," N. Y.

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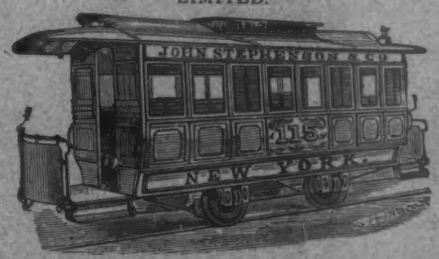


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VOL. 57 NO. 12

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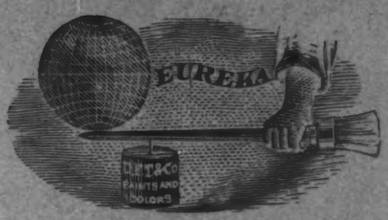


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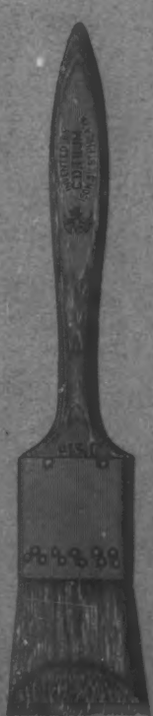

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